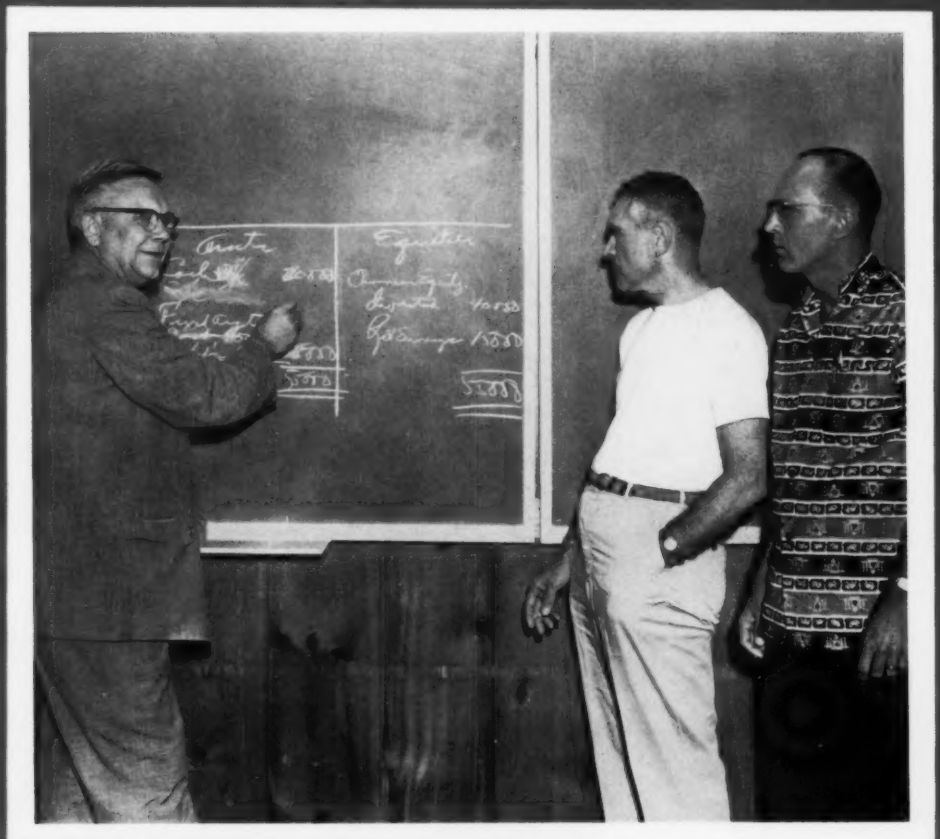
SEPTEMBER 6, 1958
VOL. 155 — NO. 10

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY



DEVELOPING MANAGEMENT

Dr. W. F. Frese, Harvard professor, outlines problem in financial administration for G. A. Henner (center), of Rochester, N. Y., and W. B. Salsbury, Honolulu, T. H., enrollees in USITA management course at U. of Kansas. Story on executive courses, page 19.

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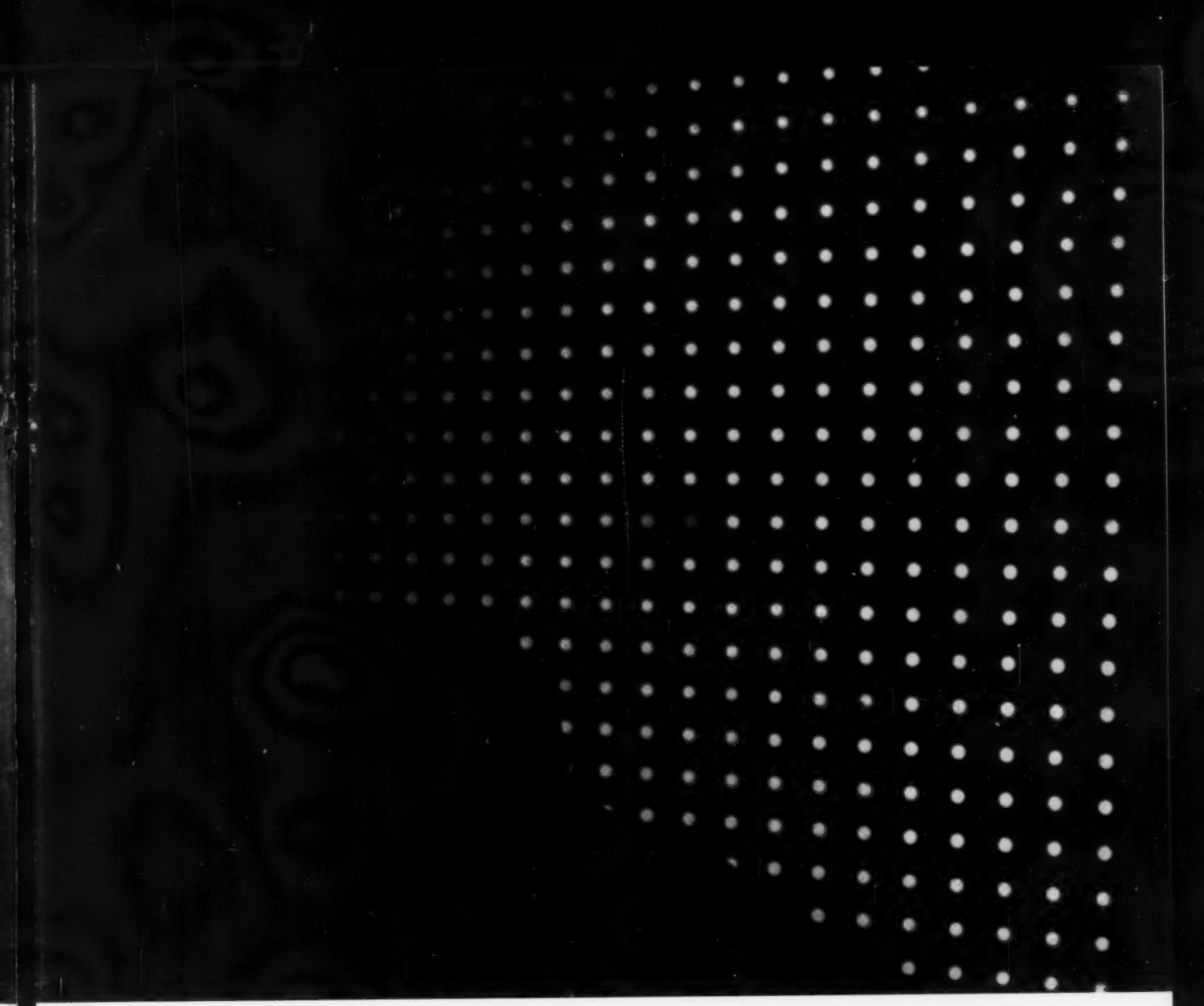

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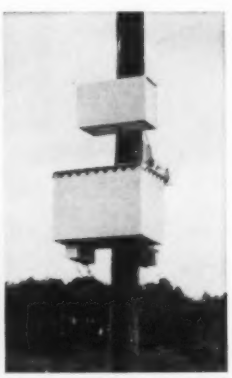

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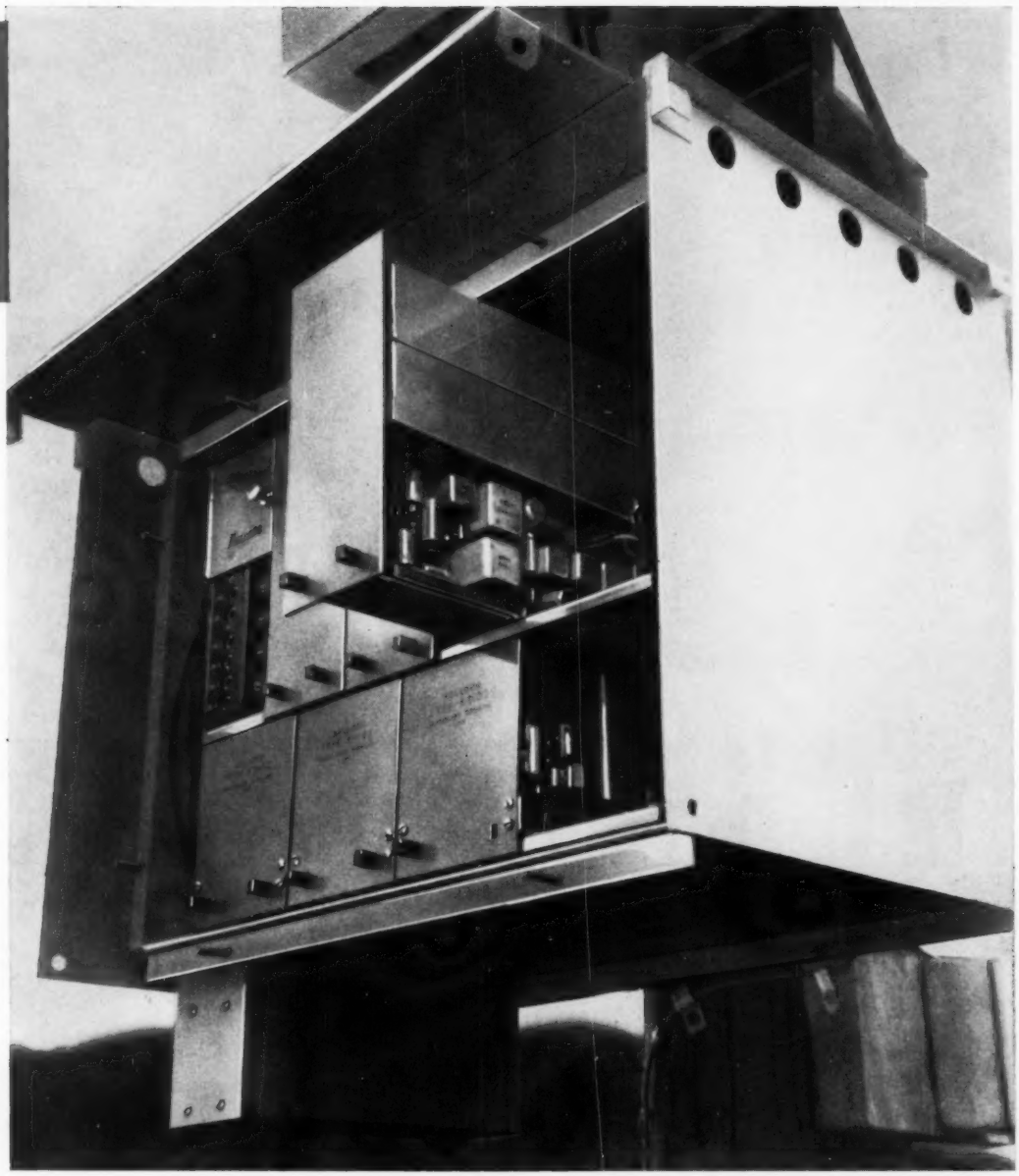

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MINIGAP ARRESTERS

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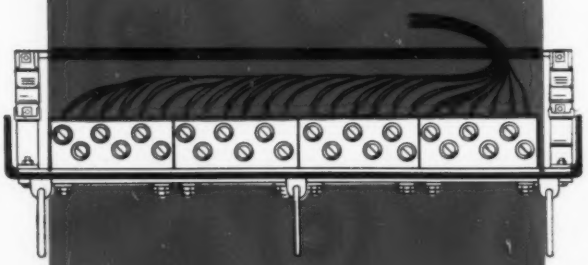
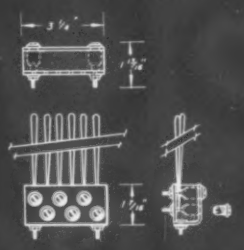
FOUR 3 PAIR 3C PROTECTED BLOCKS

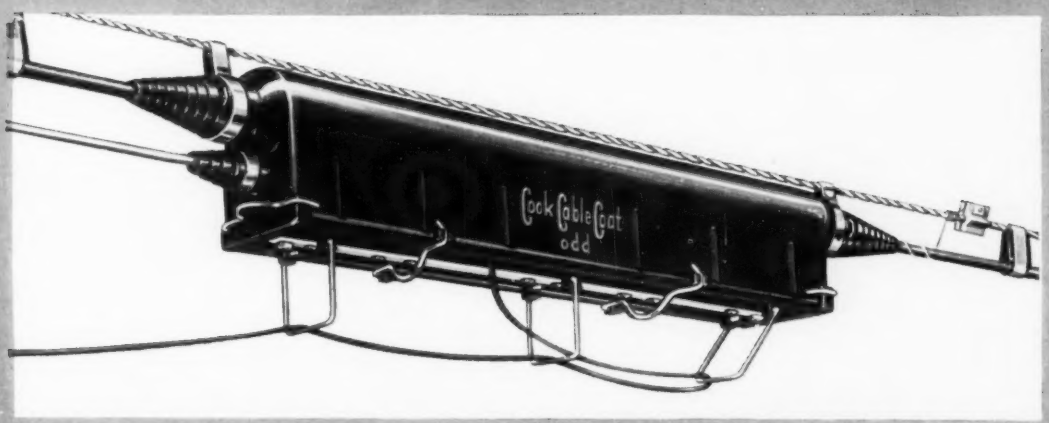


U.S. PAT. NO. 2,688,105
CANADA PAT. NO. 516,479

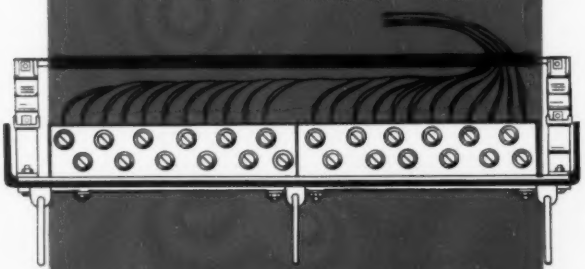


Three pair 3C protected block	81-203
*Minigap Arrester (.01" airgap)	41-610

* Listed as Standard by the R E A



TWO 6 PAIR 3C PROTECTED BLOCKS



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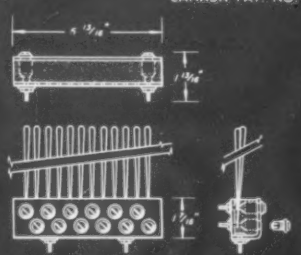
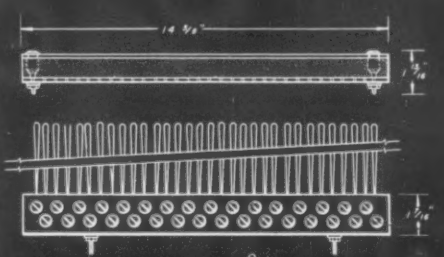


Six pair 3C protected block 81-206
Minigap Arrester (.005 airgap) 41-285

ONE 16 PAIR 3C PROTECTED BLOCK



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Sixteen pair 3C protected block 81-216
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2700 SOUTHPORT AVENUE CHICAGO 14, ILLINOIS

FLASHES AND PLUGS

CONVERSATION ENDED! A skunk had taken over a telephone booth in Grand Haven, Mich. Lengthy debate over how to release him ended when someone suggested opening the door to let him out. It worked.

•

HAIR RAISING! The *Jamestown (N. Y.) Sun* ran the following recently in its classified ad section:

"Lost—A brown toupee. If found, telephone Midway amusement park and ask for Baldy."

•

CHEERY GREETING. On Aug. 1 the operators at the Bel Air Sands in Los Angeles answered telephone calls with "Good morning—postage rates go up today."

•

FAMILIAR SURROUNDINGS. "Did the girls in your office admire the engagement ring I gave you?" asked the pompous young man.

"Better than that, dear," his telephone operator fiancee cooed. "Two of them recognized it."

•

EQUAL TO THE OCCASION. The smart young man wanted a job as a reporter on a small local newspaper. After his interview, the editor told him he would be hired if he could write a good headline for the following situation:

"A young couple got a preacher out of bed at 3 a.m. and asked him to marry them. How would you headline that?" asked the editor.

"Oh that's easy," replied the confident youth. "I would just head it . . . 'Parson Ties Knot in His Shirt-tail.' "

•

THOSE MEDICAL TERMS! A Connecticut hospital plan issued a folder explaining the benefits for anesthesia. A lady subscriber called the office to express her approval.

"But," she questioned, "what kind of disease is anesthesia?"

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Dept. of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

September 6, 1958

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H. D. FARGO JR., *President and Director of Advertising* • A. J. STULTS, *Vice President and Advertising Manager* • R. C. RENO, *Vice President and Editor* • DAN S. FARGO, *Vice President and Managing Editor* • DIANNE P. DRUCKER, *Associate Editor* • FRANCIS X. WELCH, *Washington Editor* • RAY BLAIN, *Technical Editorial Director* • HAROLD B. McKAY, *Electronics Editor* • MAYME WORKMAN, *Traffic Editor* • VIVIAN RYDEN, *Circulation Manager.*

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ACME VISIBLE

UNDER-GLASS BULLETIN HOLDER

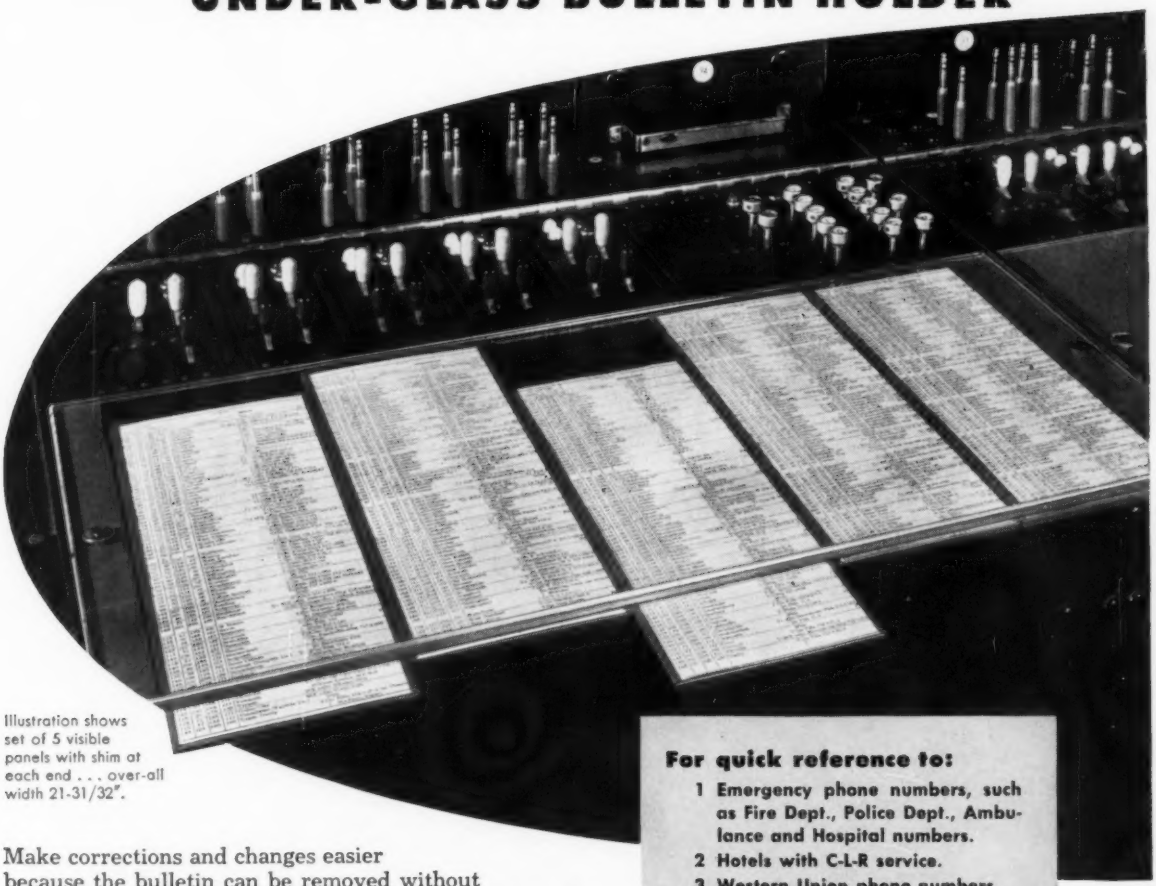

Illustration shows set of 5 visible panels with shim at each end . . . over-all width 21-31/32".

Make corrections and changes easier because the bulletin can be removed without loosening the glass. Being divided into a number of panels only the panel (page) to be corrected need be removed. One piece steel construction, flanged at back and side edges to hold the bulletin in place. The front edge is formed to provide a "pull" to slide panel out. A shim at each end panel makes the over-all width the same as the Bulletin Glass space. Shims are slightly thicker than panels and have a slot through which the Plexiglass screws hold the glass firmly, and permit sliding the individual panels in and out. Made to meet dimensional requirements both as to individual panels and over-all size of boards.

For quick reference to:

1. **Emergency phone numbers, such as Fire Dept., Police Dept., Ambulance and Hospital numbers.**
2. **Hotels with C-L-R service.**
3. **Western Union phone numbers.**
4. **Telephone numbers of local companies receiving frequent long distance calls.**
5. **Frequently called direct circuit points and tributaries.**
6. **DSA Toll points.**

Acme Visible Equipment has been designed for telephone use by Acme Systems Engineers in close cooperation with practical, experienced telephone experts. Tell us your requirements and receive our suggestions and quotations.

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☐ Have representative call. Date_____ Time_____

☐ We are interested in Acme Visible equipment for_____ records.
KIND OF RECORD

COMPANY_____ ATTENTION_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

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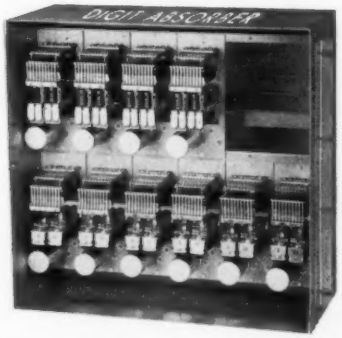
STREET ADDRESS_____

CITY_____ ZONE____ STATE_____

INVESTIGATE UNIVERSAL DIGIT ABSORBER*

FOR CONVERTING EXISTING SWITCHBOARDS INTO FULL 2-5 NUMBERING



Digit absorber case requires 17" on a 19" relay rack. Capacity 12 units.

Other ***UNIVERSAL*** Equipment:

COMPUTER INTERCEPT
Code-to-Selective RINGING CONVERTER
TRUNK DIGIT REGISTER

DIRECT DISTANCE DIALING REQUIRES A 2-5 CODE

Few dial switchboards of earlier design have provisions for adding digit absorbing features economically. The Universal Digit Absorber fills this need easily and at nominal cost. Installation requires very little time and does not interrupt service.

The ever-increasing requirements of Extended Scope Dialing on a universal numbering arrangement are easily handled by the Universal Digit Absorber. The Digit Absorber is a factory assembled, fully-wired, applique unit that can be connected to any existing dial switchboard to pad in three digits of exchange code (ABX) or four digits in the case of a three digit dial board.

There are two types of Universal Digit Absorbers, depending on the complexity of the exchange codes assigned:

19-S unit will handle exchange codes, as illustrated by AB-X, where the "X" digit is not a duplicate of the "A" or "B" digit.

19-L unit is required where the "X" digit is a repeat of either the "A" or "B" digit.

In addition, Universal offers a Trunk Digit Register which can be applied to "Trunk on Line" dial boards where five or more digits are required to be delivered to a 3 or a 4 digit tributary exchange. This unit also affords added link hunting time and safeguards against partial digit registration.

* Pat. Pend.

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3. Famous Brands
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TELEPHONE MEN

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of all the tools and supplies in your order requires ingenuity on the part of the order packer. His motto is, "pack 'em to protect 'em." And to be on the safe side, he checks the entire shipment against his packing slip to make certain everything is included.

5. Prompt Shipment

saves time. In most cases, your order is loaded on the truck within hours after it is received. Someone always checks to make sure the order is properly braced to insure safe arrival. No matter what you order from Automatic Electric, we do our best to get it to you in good condition, in the shortest possible time.

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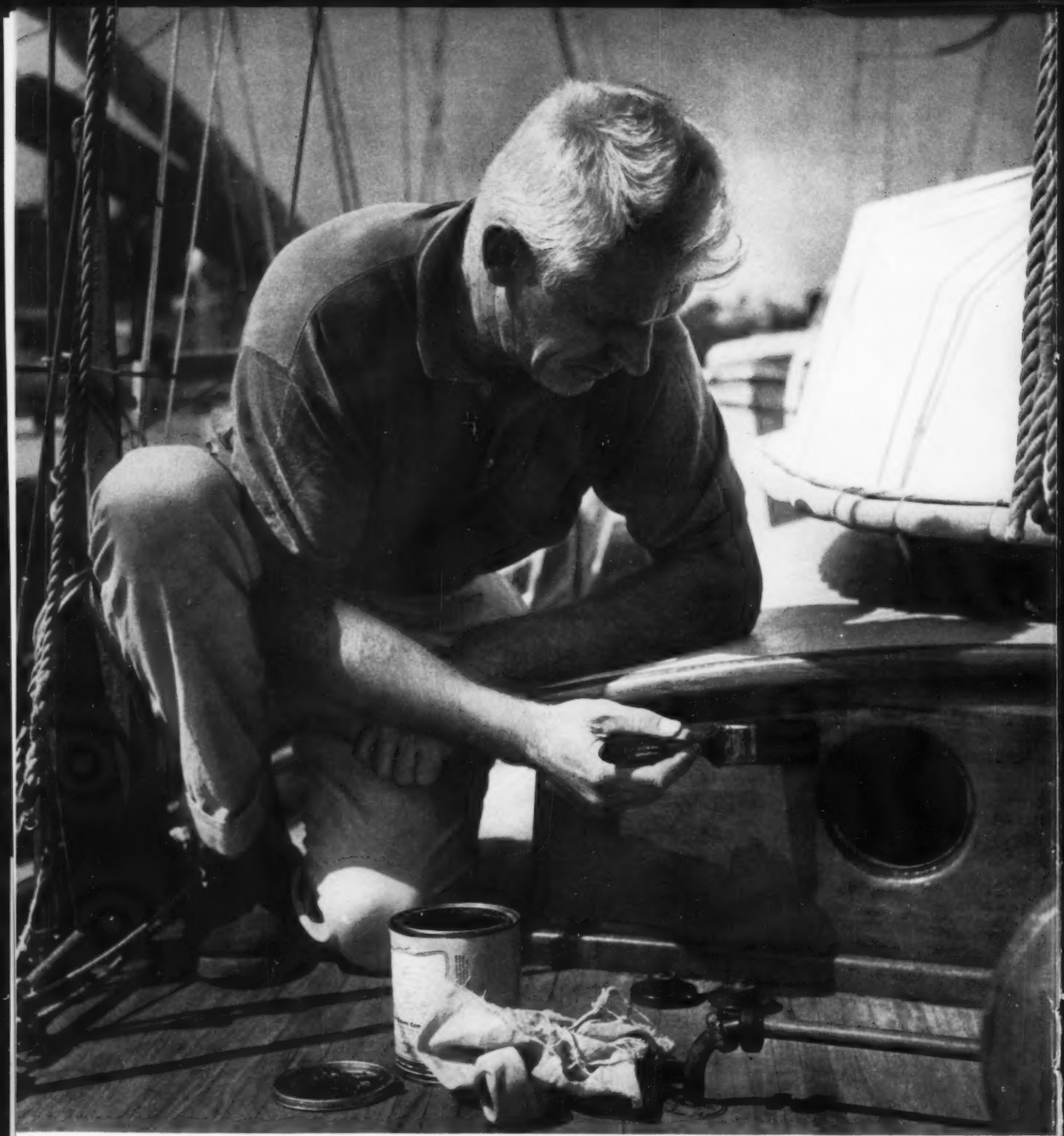

TIME IS THE MEASURE OF ALL WOOD PRESERVATION

During working hours or leisure hours—if the topic is wood preservation, the question is, "Which method?"... For more than fifty years, major industrial users of wood have confirmed that the best answer is AMCRECO pressure treatment.

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PRESSURE TREATED WOOD PRODUCTS

AMERICAN CREOSOTING CORPORATION LOUISVILLE 2, KENTUCKY
SUBSIDIARY OF UNION BAG-CAMP PAPER CORPORATION

Maintenance of

Toll Ticketing Equipment

By T. G. WALSH*

THE NEARNESS of Main Street America and Exchange USA is being felt throughout the country. Transportation requirements of body and voice have continued to grow over the past 10 years, and to accelerate unbelievably over the past five, to the point where "rate of growth" predictions have become obsolete before they could be drafted and distributed.

"Interurbia," the changing face of America, is a new word coined to describe the conditions we are now facing. *U. S. News & World Report* (April 5, 1957), for example, describes the explosive growth of California as a strip city from the Mexican Border to Los Angeles, then up through the San Joaquin Valley through Bakersfield, Tulare, Fresno, Madera, Merced, Modesto, Stockton, until it joins by 1980 with the bay area of San Francisco, Oakland and Sacramento. To focus our sights on our own problems of Exchange USA, Direct Distance Dialing (DDD) is here, with or without question as to its worth at the present stage of development, but we can be certain that it is here to stay!

Independent companies, small now, will be larger than they anticipate, sooner than they think. They are called upon now to provide these DDD facilities. To operate with this system, the local Independent company is required to furnish the necessary call-processing equipment that will provide satisfactory service conditions to their customers, *plus*, and this is a big plus, the additional mechanical brains to provide adequate and trustworthy billing information.

The machinery necessary to launch the call from the number pad of the subscriber's station dial and guide it to most anywhere in the country or continent, without the aid of hands or human brains, is the GMRBM which we are to consider here.

GMRBM is to be considered in this case as: Good Maintenance Results Bring Money. This statement is made to emphasize the point that the cash register for your toll business will be in the machines you place in your switchrooms.

In San Fernando, Cal., on July 31, 1948, the California Water & Telephone Co. placed in service the first director system step-by-step office in the United States. In Monrovia, on July 26, 1950, it cut its first SATT system into operation. We were preceded by the Sunland-Tujunga Telephone Co. by about three months. From then on, we continued our conversion to SATT operation, until 1954, when all California Water & Telephone Co. offices in the Los Angeles metropolitan area were converted to this type of operation.

The maintenance aspects of local area automatic ticketing systems, and their close relative, Direct Distance Dialing, have caused us to change our focus on what is expected of maintenance people. More of the maintenance work is operational in the sense that billing equipment must be checked frequently and serviced often. Practices and procedures have had to be established for common equipment, both switching and billing. All common equipment, because it is common to a large group of subscribers, has a high "rate of use" factor, and can affect a large number of calls if not working properly.

Routine test equipment, automatically or manually operated, is usually furnished for testing common equipment functions. We have found such equipment to be only as effective as the craftsmen who operate it. We have also found that it has been necessary to extend and perfect test equipment to detect service affecting troubles that can no longer be detected and reported by operators, such as a call-through test device designed to make through tests from each line finder group.

Your equipment quantities have probably been engineered to provide a safe margin for outages because of trouble. Even if this is so, they should be considered a buffer zone not to be invaded unless absolutely necessary. It will be to your advantage to know just how many common equipments are required to handle your heavy traffic loads so that you will be able to calculate your risks when circuit outages occur. Serious outages may result from lack of replacement parts, or they may develop if the basic principles of good maintenance are not followed.

Providing a high level of service on rapid and dependable switching equipment is the basis for the ultimate industry-wide objective of Direct Distance Dialing. The American Telephone & Telegraph Co. notes on nationwide dialing describe our problems as follows:

"For both operator and customer nationwide dialing, the personnel, test equipment, methods and organization of the maintenance job should be of a high quality in order to maintain the precision and stability required of the nationwide network of interconnecting switching systems.

"Trouble detection is more difficult

"Nation's Capital" Will Return Sept. 13

There will be no "In the Nation's Capital," by Francis X. Welch in this issue as Mr. Welch is attending a meeting of the American Bar Association (ABA) in Los Angeles. Mr. Welch is secretary of the Public Utility Section of the ABA. He will resume his regular column in the Sept. 13 issue of TELEPHONY.

*Mr. Walsh is Division Maintenance Superintendent of the California Water & Telephone Co. of Monrovia, Cal. He gave this address at the 1958 convention of the California Independent Telephone Association.

with nationwide customer dialing, because operators can no longer supervise the connections that are established.

"Employment of alternate routing adds to the difficulty of identifying circuits in trouble.

"Accordingly, maintenance methods and facilities, based on requirements for dial operation, have to be provided rather than attempting to use older techniques based on manual operation, since many of the trouble indicators under ringdown operation will no longer be applicable."

The basic principles of good maintenance can be briefly stated. They follow very closely the principles of good management; they apply to all levels of organization and can be applied to any or all problems:

(1) KNOW—Knowledge of the problem. Where to go to obtain facts and information.

(2) TEST—What are we looking for? What has happened that should have happened? What has happened that should not have happened? What has not happened that should have happened?

(3) ANALYZE—What have we found? What was the cause? Was it a man-made error? To what extent does the problem reach?

(4) DETERMINE—What shall be done? To what extent is corrective action necessary?

(5) ACT—*Do it now* and do it right the first time.

Description of methods used to keep equipment in a state of acceptable or unacceptable level of efficient operation. For the purpose of relating performance and cost, to telephone equipment, there are the following several types of maintenance to consider:

(1) *Protective Maintenance.* Periodic call through and supplementary tests and inspections for insurance of the proper operation of all regular and stand-by equipment, including tools and test equipment. A daily survey of circuits out of service should be made early enough for them to be checked out and back in service before required for the peak traffic load.

(2) *Preventive Maintenance.* Correcting conditions that will cause trouble before they become service affecting, including building conditions, dust, heat, light, control of work areas within the switchroom.

(3) *Corrective Maintenance.* Getting to the root of the trouble and using the proper course of action to eliminate recurrence. Beware of stop-gap or shotgun procedures. Corrective action should be strictly in accordance with standard practices.

(4) *Qualitative Maintenance.* The analytical approach; using rate of incidence and kind of trouble from all reporting sources as the basis for protective, preventive or corrective action to be taken.

(5) *Neglective Maintenance.* Inadequate supervision, planning, training, lack of proper methods, practices and procedures, insufficient or unqualified personnel, tools and/or test equipment.

(6) *Forced Maintenance.* Panic button—usually because of extreme or prolonged emergency conditions, but it could also be related to "Neglected Maintenance."

(7) *Excessive Maintenance.* Very expensive; it could happen from over indulgence on any of the above items. Continuous screening of the maintenance program as a whole is required to maintain it in proper balance.

(8) *Specific Maintenance.* Usually due to rearrangements and changes necessary because of additions to working equipment or modifications in type of operation. It could also be a program of planned replacements due to age, wear, or obsolescence.

Potentially High Cost Maintenance Factors Are:

(1) Design of equipment, its components, operating limits and its compatibility with other circuits with which it is called upon to work.

(2) Layout of equipment should be on a functional basis, to eliminate lost time and motion in the switchroom, and so that it can be easily accessible for tracing and clearing trouble.

(3) Control of dust in the equipment room. Dirt is our worst enemy; every grain of dust is a potential case of contact failure. Some form of dust control should be employed. Control excessive foot traffic in switchroom, other than switchroom personnel. Excessive traffic should not be allowed, and building conditions should be changed if necessary to eliminate it.

(4) Safety in the maintenance operation—protection of equipment against exposure to damage, fire—unnecessary handling by maintenance personnel.

Training of Maintenance Personnel. As equipment becomes more complex, the techniques should become more comprehensive in order to detect and correct malfunctions. Greater emphasis must be placed on training in all phases of maintenance, as follows:

(1) Analytical procedures must be developed and more study is required because of the complicated circuitry involved in this type of operation. Fast moving common control circuits, such as register senders, directors, rate and route translators, calling party identifying equipment, ticketers or ticketing adaptors, dating and timing equipment, must be studied and understood. I mean by this that circuit description sheets, furnished by the manufacturer, alone are not enough to do the job. A study of the whole operation, by the use of skeleton schematics, made for this purpose and developed by the people in your maintenance organization, is required, whether you have a force of one man or 100. These schematics, along with other material, should show the function through all the components involved for the purpose of comprehending the over-all picture, and should be detailed so as to have value in tracing and clearing trouble.

I believe that training of craft and supervisory people is a constant necessity. Formal training classes are most necessary, but one of the subjects that should be taught is the necessity of review training and the constant application of training methods to all phases of our work.

(2) Analysis should be made of trouble reports from all sources available, such as:

(a) Test center subscriber reports.

(b) Operator handled Direct Distance Dialing assistance calls. Procedures for this type of analysis have been prepared by the Bell System. Independents will be required to cooperate with Bell and use its methods.

(c) Commercial reports from customer.

(d) Credit tickets. Requests from subscribers for credit because of wrong numbers reached or denials. Denials should be analyzed from subscriber's calling pattern.

(e) Routine operation test results analysis.

(f) Correlation studies of rate and route information. Periodic studies should be made to verify rate information if it is furnished from the central office equipment.

(g) Logging trouble reports from all sources and stroking trouble types for analysis purposes.

Tools and Testing Equipment. "If you need a tool and don't buy it—you pay for it but don't have it."—Henry Ford. It is well to consider this quote, and you'll probably agree that we pay many times over the cost by not having proper tools and testsets when we need them. We could also say at this point that the best maintenance tool is a carefully trained, careful man. Any or all of the tools would not be beneficial unless they are properly used. When working with connecting companies, we have found it beneficial to use the same type testing and adjusting equipment. This forestalls any question that might arise as to the validity of the results.

Replacement Parts. Equipment out of service because of defective or worn parts can seriously affect operation, especially so if common control circuits are involved. The problem here is a tough one. To go overboard will cost a lot of money in parts, storage and stockkeeping. To go under in your supply of parts might seriously affect service. Some of the parts we have found to need replacement most are common equipment pulsing and control components, such as rotary switch drive parts and wiper assemblies in the directors. When analyzing parts requirements, we have found it a good idea to list relay coils and other parts by like quantities in each circuit, then analyze all circuits for like parts and order accordingly. Consideration should also be given to having a spare set of common control equipment available,

(Please turn to page 39)

Management Development Programs Gain Increasing Support

THOSE telephone men who attended management development programs this summer at four universities were grooming themselves both for greater responsibilities in years to come and for improved performance in their present positions. Moreover, as Dr. James R. Surface, dean of the University of Kansas School of Business, observed, these same executives were adding to the pool of highly developed American managerial talent which constitutes our country's "real secret weapon." The four management programs referred to are:

USITA Management Development Program, University of Kansas, Lawrence.

USITA Telephone Engineering Management Conference, Michigan State University, East Lansing.

Executive Program in Business Administration, Columbia University (Arden House Campus), Harriman, N. Y.

Advanced Management Program, University of Hawaii, Punahou Campus.

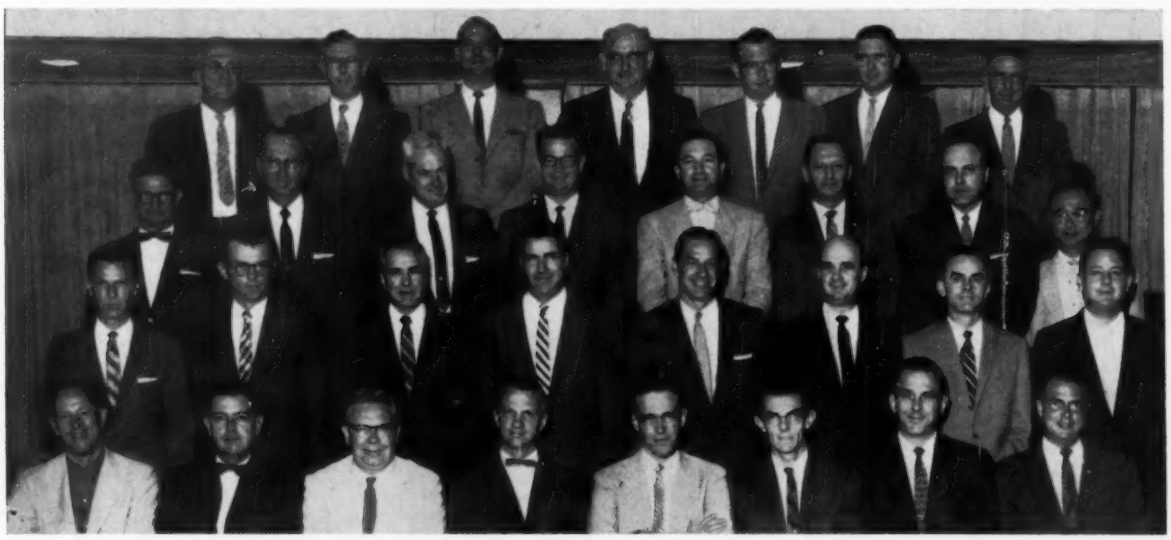
More extensive descriptions of these courses follow under each university heading:

University of Kansas

An intensive four-week management development program exclusively for executives of Independent telephone companies was completed on Aug. 9 at the University of Kansas.

The program was planned by the Personnel Committee of the United States Independent Telephone Association and the Kansas University School of Business.

"The objective is to help these executives to do a more effective job in their current positions and to help them prepare for more challenging administrative responsibilities," said Dr. James R. Surface, dean of the School of Business and director of the program. Dean Surface had extensive experience with management development programs in this country and Canada while he was



Participants in the USITA Management Development Program at the University of Kansas are (FRONT ROW, left to right): Edward G. Nelson and Frank S. Pinet, members of the faculty, University of Kansas; Walter F. Frese, Harvard Business School, Cambridge, Mass.; Dr. James R. Surface, Director of the Program, University of Kansas, Charles B. Saunders and Bertram L. Trillich Jr., faculty members, University of Kansas; Richard Lashley, assistant director of the program, University of Kansas; Thomas Schultz of Erie, Pa. SECOND ROW: John D. O'Neil (General Telephone Directory Co., Des Plaines, Ill.); Donald H. Hansen of La Crosse, Wis.; Gilbert A. Henner of Rochester, N. Y.; Martin M. Wandrey of Middle States Telephone Co. of Illinois, Des Plaines, Ill.; Forrest R. Stroud Jr. of Marion, Ohio; John D. Allen of Brownwood, Texas; Robert Campbell, General Telephone Co. of Wisconsin, Madison; Lionel Lagarde of Larose, La. THIRD ROW: A. J. Lacy of Brownwood, Tex.; William B. Salsbury of Honolulu, Hawaii; Thomas Grant Jr., General Telephone Co. of Illinois, Springfield; Wallace Oliver of Everett, Wash.; Norman J. Spletter of Blythe, Cal.; Everette Kahl of Grinnell, Ia.; John Robinett of Everett, Wash., and Yoshiharu Nishida of Honolulu, Hawaii. FOURTH ROW: Wilbert S. Lightfoot of Rochester, N. Y.; Lee I. Hunt of Middletown, N. Y.; William P. Rose of Rochester, N. Y.; Thomas G. Walsh, William E. Kingsley and Thomas W. Oglesby, all three of Monrovia, Cal., and George A. Hearne of Kansas City, Mo.

a member of the Harvard University faculty.

Instruction, in which the case method technique predominated, covered these areas: functions of administration, the American business climate, and rate regulation.

The functions of administration area of the course was subdivided into control and financial administration, human relations in business, merchandising, and administrative policy and planning. In these the case method of instruction was used almost exclusively. This requires the individual first to analyze an actual business problem and then to test his ideas about the case against those of his colleagues and the instructor. Out of this steady diet of case problem analysis and discussion, the participant can expect real improvement in his ability to analyze business problems, make better decisions, and to communicate more effectively with business associates.

A day's class schedule began at 8:10 a.m., and continued through the evening study period to 10:30 p.m. Even luncheon and dinner periods were devoted to related, although more informal, instruction.

Participants in the program lived in air-conditioned Grace Pearson Hall, while all classes and meals were taken in the air-conditioned student union building, less than a block away. Participants held temporary memberships in the Lawrence Country Club, but halfway through the program they had been doing very little golfing.

The faculty included A. J. G. Priest, professor of law at the University of Virginia and a leading expert on public utility law; Prof. Walter F. Frese, Harvard Graduate School of Business; and from the Kansas University faculty, Edward G. Nelson, Frank S. Pinet, Charles B. Saunders, Bertram L. Trillich Jr., and Richard H. Lashley, assistant director of the program.

At commencement ceremonies for the 24 (see cut) who completed the Kansas University course, State Senator Donald S. Hults, of Lawrence, stressed the importance of continuing education for the American businessman and his employes; also the importance of the free enterprise system to the United States, and of communicating our knowledge of it as a vital support for its continuance.

Clive W. Haas, of Big Timber, Mont., president of the United States Independent Telephone Association, was unable to be present. In a message read during the ceremony, he said:

Kansas State Senator Donald S. Hults addresses USITA Management Development Program graduates at University of Kansas. At the speakers' table are, left to right: Richard Lashley, assistant director of the program; Ray Dalton, chairman of USITA's Personnel Committee; Senator Hults, Dean James R. Surface, director of the program; and Dean John H. Nelson of the Graduate School, University of Kansas.

"Education is an ever-continuing process and the absorption of knowledge, especially knowledge of the business in which we move and make our livelihood, is a never-ending obligation. With people changing, management changing, technology changing and our service constantly changing, it would be unforgivable not to use every means within our power to improve our competence and our understanding of the world around us and our place within it. The need and demands for and upon management talent will continue to increase. The completion of this Program and the graduates being honored today are additional evidences of the fact that Independent telephone companies are determined to keep pace."

In his commencement talk, Dean Surface emphasized the necessity of America's maintaining its worldwide lead "in management techniques which constitute our 'real secret weapon.' While we may set up crash programs to speed development in science and engineering in the belief that other nations may approach or surpass us in those areas, we must never forget that our margin of superiority in managerial skills is a real and continuing weapon for peace and progress. We cannot afford to make up scientific and engineering deficiencies at the cost of any diversion from essential, continued, maximum development in managerial techniques."

Michigan State University

The United States Independent Telephone Association, through its Subcommittee on Engineering Education, again this year associated with Michigan State University to sponsor and present on June 29 through July 25 the second Telephone Engineering Management Conference. Thirty-five telephone men attended (see cut).

Great expansion in the telephone industry having called for tremendous and continuing expenditures for equipment and personnel, it was seen as necessary that appropriation and management of these large sums and engineer-management relationships, must fall more and more into the hands of capable engineers. Since it was also felt that many engineers have had little training in the "science of money," this program was created—and planned for annual offering — to bring together practicing telephone engineers and authorities in the broad field of practical economics.

The sponsors also stated, "This program is designed for engineering and management personnel of the telephone industry. For the building, commercial, cost, equipment, plant, production, traffic, transmission, factory and sales engineers special emphasis is given on economic concepts resulting in a broadening of knowledge and interests.

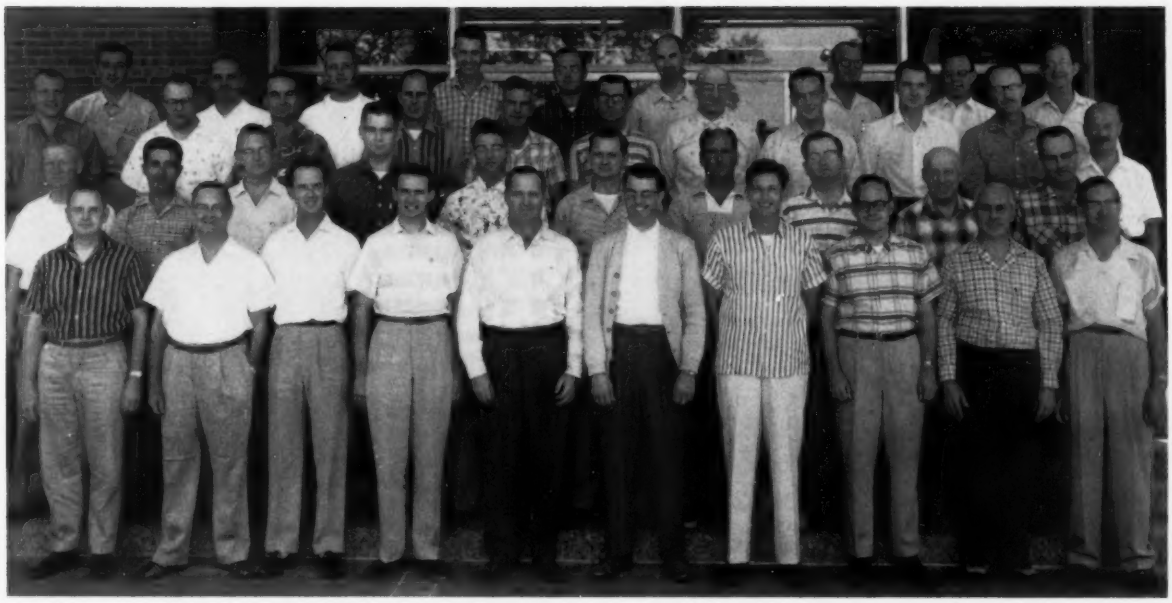
"For management personnel, the program presents a better view and understanding of engineering problems. The four-week period for a group of telephone people to live together offers invaluable occasion for the exchange of ideas."

The group was divided into sections to enhance individual attention and participation. Staff members were available as advisors and consultants throughout the program.

The following is a summary of the curriculum:

(1) *Fundamental Economic Concepts:* In order to better understand the decision-making problems which every executive faces each day, the telephone engineer must be firmly grounded in basic economics:

The changing American economy . . . sources of economic expansion and



Participants in USITA's Telephone Engineering Management Conference at Michigan State University are (FIRST ROW, left to right): Billy J. Lovitt, General Telephone Service Corp., New York, N. Y.; William D. Soar of San Angelo, Tex.; Robert G. Dinsbier of Tampa, Fla.; Jules J. Ghyselinck of Casey, Ill.; Donald K. Wightman of Norwich, N. Y.; Robert J. Dennis of Springfield, Ill.; Robert M. Myres of Everett, Wash.; Albert E. Beckwith of Johnstown, N. Y.; William M. Humphrey of Tampa, Fla., and Gardner Jones of Michigan State University. SECOND ROW: Butler A. Isaman of Lincoln, Neb.; Gerard Lavergne of San Juan, P. R.; Donald L. Hirt of Monrovia, Cal.; Thomas J. McCallum Jr. of Brownwood, Tex.; Fred J. Campa of Tampa, Fla.; Henry G. Wade Jr. of Monroe, N. Y.; Thomas G. Pollock of Monrovia, Cal.; Graham A. Foote of Springfield, Ill.; Elwood D. Guernsey of Columbus, O. and Donald L. German of Brownwood, Tex. THIRD ROW: Wade K. Marsh of Chicago, Ill. (Kellogg Switchboard & Supply Co.); William W. Axford of Owosso, Mich.; Fred S. Williamson of Honolulu, T. H.; Elmer R. Dubuque of Everett, Wash.; George M. Alston of Santa Monica, Cal.; Robert J. Smeed of Three Rivers, Mich.; William J. Melchers Jr. of Muskegon, Mich.; Theodore H. Case of Hudson, O.; Eugene P. LaBelle of Vancouver, B. C.; David R. McClain of Marion, O., and Anatole R. Gruehr of Brooklyn Polytechnic Institute. FOURTH ROW: Gene Chiodo of Tremonton, Utah; Robert W. Friess of Plymouth, Wis.; Cyrus J. McLean of Vancouver, B. C.; Gilbert F. Auchinleck, Joseph P. Lackey both of London, Ky.; Elbert H. VanHouten of Erie, Pa.; Fredrick D. Rahdert of Santa Monica, Cal.; John Jeffries and Daniel R. Fusfeld, both of Michigan State.

growth . . . The role of private enterprise . . . the function of profits . . . demand, supply, and price . . . competition and monopoly . . . government regulatory bodies and their impact on utilities.

Causes of prosperity and depression . . . flow of spending . . . savings, investment and income . . . money and the banking system . . . the function of debt . . . government stabilization policy . . . sources of economic data . . . projections and forecasts.

(2) *Cost Considerations in Engineering Decisions:* The telephone engineer is frequently faced with problems involving choice between two or more engineering alternatives. In such situations, cost comparison is of major importance as a guide to decision-making. Without overlooking other criteria of executive decision, this course addresses itself directly to these issues:

Cost behavior . . . fixed and variable costs . . . average costs and differential costs . . . joint costs and their allocation . . . interest and annuities . . . present worth, future worth, annual costs . . . methods of comparison of alternatives.

Depreciation and its treatment . . . maintenance and operating expense . . . materials and supplies . . . taxes and insurance . . . income taxes and equated cost of money.

Proportioning of factors of production . . . economic vs. technological analysis . . . long term and short term study period . . . revenue considerations . . . evaluation of estimating data . . . risk and uncertainty . . . factors not adaptable to monetary evaluation.

(3) *Engineering Fundamental Plans:* Engineering design takes available and possible alternatives and selects from them a pattern of plant development simultaneously capable of meeting current needs and providing a foundation for logical and orderly growth to the ultimate requirement. Areas of planning and their techniques include:

Basic objectives . . . Integrated exchange and toll design . . . Growth forecasts . . . Pilot fundamental studies . . . Economic selection . . . Districting . . . Wire center calculation . . . Switching centers.

Backbone and feeder layout . . . Trunk studies . . . Conversions . . . Toll centers and networks . . . Mechanization . . . Building plans . . . Policy Considerations . . . The continuing fundamental plan.

(4) *Operation Analyses:* In addition to planning and designing new installations a telephone engineer is concerned with the most efficient use of existing facilities. Besides guiding the present, the ability to analyze data is extremely helpful in making future plans:

Managerial uses of accounting information . . . data collection and analysis . . . interpretation of accounting reports and statements . . . systems of internal control over assets and expenses.

Planning and controlling current operations through budgetary procedures . . . the management of working capital . . . financing . . . applications of statistical analysis in operations.

(5) *Communicating Engineering Decisions:* A major deterrent to the installation of sound engineering ideas is the inability of the engineer to communicate these ideas to his superiors, co-workers, and when the need arises, the public:

Effective business communications . . . organization and preparation of reports and letters . . . discussion, organization and participation . . . persuasion . . . conference leadership . . . oral communication techniques . . listening and reading as related to other communication forms . . . use of visual and oral aids.

(6) *Technological Horizons:* A look into the future is always of great interest to the engineer. Leading authorities gave a glimpse of coming technical advances:

Semi-conductor theory and application . . . electronic switching . . . tro-

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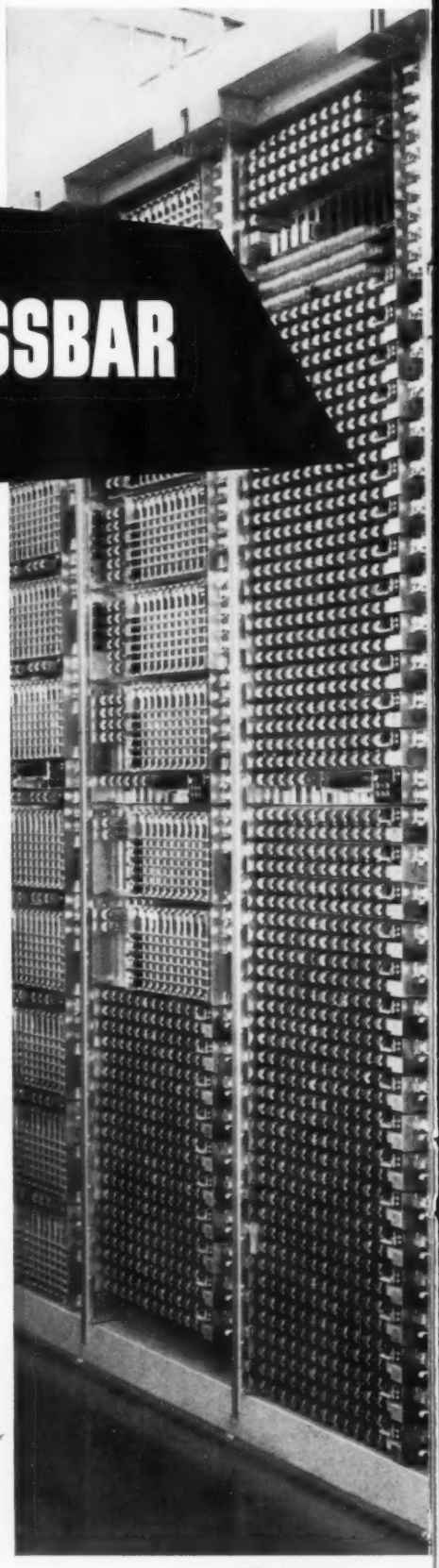
10 reasons why

NORTH BY-PATH CROSSBAR

is the most advanced switching system available to the telephone industry...



1. Can search over as many as 80 trunks on any call, assuring a high degree of trunk availability.
2. Can route calls on a "2-5" basis without use of inter-toll directing codes.
3. Can "spill forward" as many of the "2-5" digits as necessary. Alternate routing can be provided wherever desired without additional equipment.
4. Any directory number can be assigned for coin service, measured service, PBX trunks or normal flat rate service.
5. All unassigned numbers and unidentified codes are automatically intercepted by tape recording. Directory numbers for which a referral message must be given are automatically routed to the operator.
6. A single switching train accommodates toll calls, test calls and local traffic, providing features appropriate to each type of call.
7. All senders arranged to send digital information by means of dial pulses at 10 or 20 pulses per second or multi-frequency at 7 digits per second, according to trunk requirements.
8. The above types of digital information may be received over any incoming trunk.
9. All the routing and handling equipment for Direct Distance Dialing is part of the standard Central Office Equipment.
10. Reduces requirements for toll board multiples by using a universal toll switching trunk group permitting standardized operating procedures for toll call placement requiring minimum reference to routing bulletins, substantially reducing operator's time and cost.

All these features are standard in North By-Path Crossbar switching equipment. If you are planning on new switching equipment, you'll need North By-Path Crossbar.

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NORTH ELECTRIC COMPANY

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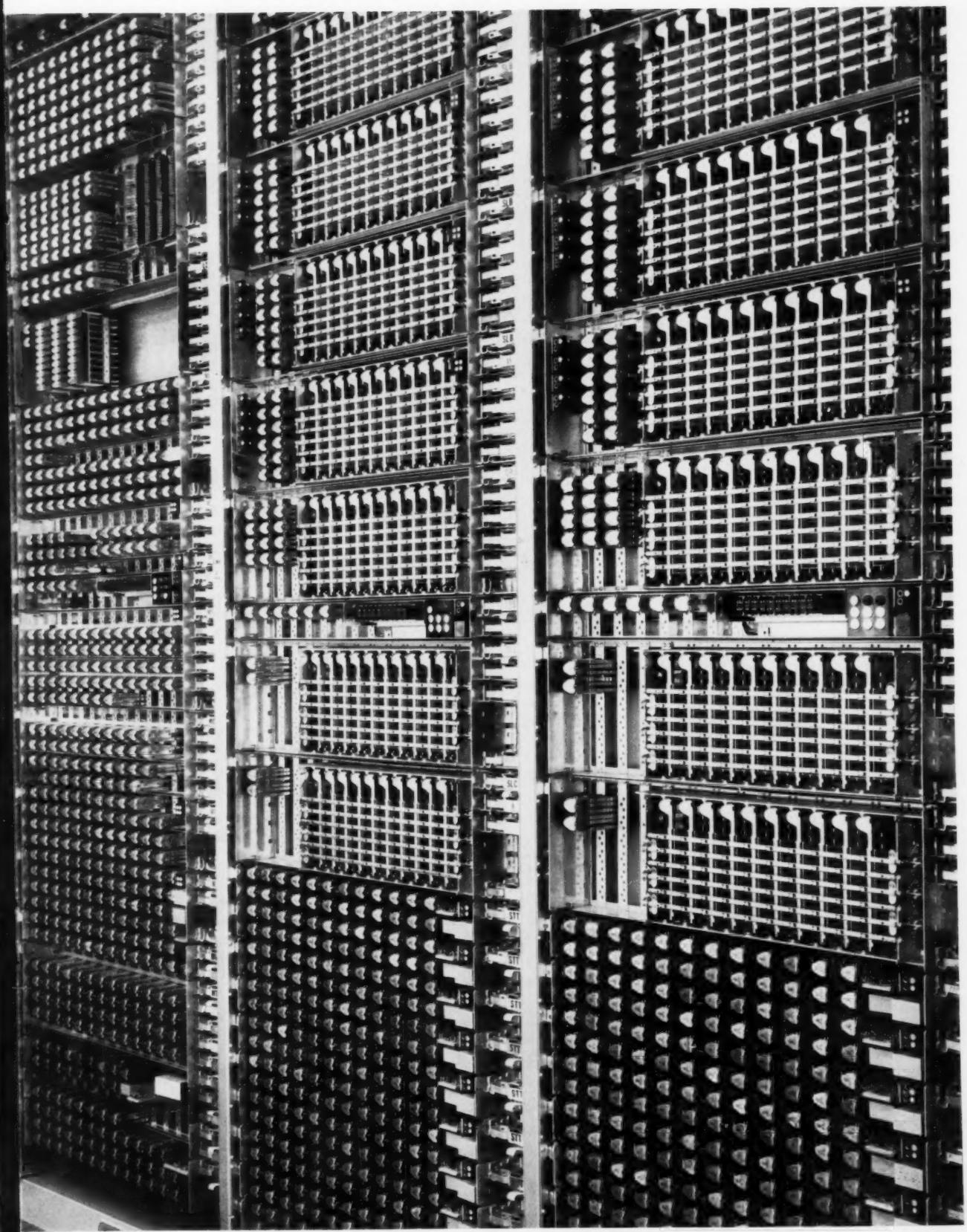

pospheric scatter techniques . . . data transmission.

Columbia University

Columbia University's Graduate School of Business conducted two six-week sessions of its Executive Program in Business Administration in Arden House, Harriman, N. Y., from June 15 to July 26 and Aug. 10 to Sept. 20.

Telephone men in attendance at the first session were William M. Cooper, general plant manager of The Bell Telephone Co. of Pennsylvania, and William J. Whittaker, assistant to vice president, Long Lines Department, American Telephone & Telegraph Co.

At the second session are: John E. Mason, Iowa general commercial manager, Northwestern Bell Telephone Co.; George B. Palmer, vice president and treasurer, Hawaiian Telephone Co., and Frank A. Robinson Jr., area commercial manager (western area — Kansas City), Long Lines Department of AT&T.

The Executive Program in Business Administration involves six days a week for the six weeks and is composed of case studies, group discussions, lectures and reading. The over-all purpose is to strengthen the executive's concepts of planning and decision-making, develop his ability in administrative processes, and augment his understanding of the economic forces, national and international, that affect business.

The program is intended not only to prepare the executive for added responsibilities, but also enable him to function more effectively in his present position. Other program objectives were stated as follows:

"Each man should return to his organization mentally refreshed and stimulated. He should have an enthusiasm, a point of view, and an enlarged fund of knowledge which will make him a better executive, a greater asset to his organization.

"The Executive Program meets the demand by business for a short-term program that will help key executives:

"(1) To acquire new approaches and attitudes for forcefully meeting administrative problems in their technical and human aspects.

"(2) To analyze policy problems from an organization-wide rather than from a departmental point of view.

"(3) To develop a broader understanding of the influences of today's economic-political-social environment on business and on the men who make policy decisions."

Enrollment is limited each session to approximately 50 men. This number, plus faculty and staff, constitutes an effective working group at Arden House.

Six mornings a week are devoted to the study of actual business situations. The first part of each morning meeting is under faculty leadership. The group then breaks up into smaller discussion units of 12-14, led by the participants themselves. All come together before lunch for appraisal and discussion of each group's findings and conclusions.

Talks are given three times a week by scholars, business men, labor leaders or government officials. Each speaks in the afternoon, and then conducts a question and discussion period.

The program of study focuses on three interrelated areas:

(1) *The determination of business policies:* developing the company-wide viewpoint; sizing up a company situation; interpretation of data; creative development of alternatives; the decision-making process.

(2) *Internal administration:* translating policies into programs; centralization *vs.* decentralization; delegation; organization structure and the individual; executive leadership; measuring results and control of operations.

(3) *Managing a business in a dynamic world:* economic, political and social forces which affect business; business cycles; roles of business, government, the consumer, agriculture; foreign trade; foreign policy; money and credit; business forecasting.

In addition to subjects listed, program members themselves were encouraged to suggest topics for extra-curricular seminars.

The faculty is drawn from Columbia and other universities, and from business and government.

Left to right: William J. Whittaker, assistant to vice president, Long Lines Department of AT&T; G. Truman Hunter, consultant of International Business Machines Corp.; William M. Cooper, general plant manager, The Bell Telephone Co. of Pennsylvania; and Robert M. Lambe, vice president in charge of sales of WTAR Radio Corp., talk things over during the twelfth session of Columbia University's Executive Program in Business Administration, held from June 15-July 26.

Columbia's Utility Workshop

A group of 25 top-level executives from the public service industry gathered on July 27, also at Arden House, for the seventh annual two-week session of the Utility Management Workshop, sponsored by Columbia University's Department of Industrial & Management Engineering, and directed by Professor Robert T. Livingston.

The Workshop is described as unique in its style of approach to management problems in the utility industry in that it coordinates formal presentations offered by experts in various fields with a closely directed program of small-group study projects. Thus it relies very heavily for the effectiveness of the entire program on the actual contributions of the participants themselves who present and explore problems of most significance to them and their companies.

The emphasis of the program this year was on two main areas outlined as: "The fundamental problem: what managers do and how they do it," and "A special application: selection and development of staff and assistants."

The Workshop was designed specifically for mature and experienced administrators from the middle and upper levels of management and aimed to supply the fundamental aids to insight, good judgment and the implementation of decision which are required by men

(Please turn to page 40)

Today's courier sits at a Kleinschmidt keyboard

The lightweight portable Kleinschmidt teletypewriter is a one-man communication center, transmitting and receiving printed communications at any location, under any conditions.

The mobility of our modern Army demands the receipt of vital information instantly and accurately. There can be no delays, no uncertainty. Kleinschmidt teletypewriters and related equipment, developed in cooperation with the U.S. Army Signal Corps, speed teleprinted communications between outpost and command control, provide both sender and recipient with an identical original simultaneously. Looking ahead . . . planning ahead . . . setting the pace for almost 60 years has made the Kleinschmidt name synonymous with development and progress in the teleprinted communications field. Now the engineering skill and research facilities of Kleinschmidt Laboratories, Inc., are joined with those of Smith-Corona Inc, forecasting boundless new achievements in electronic communications for business and industry.

Pioneer in teleprinted communications equipment

KLEINSCHMIDT LABORATORIES, INC.

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One of the microwave radio stations in Tokyo.

Earthquake-proof telephone building in Tokyo.

Telephone Service in Japan

Japanese enjoy an expanded and improved communications service since the country's telephone system was separated from direct government control — five years ago — and placed under a quasi-private organization.

by DR. TAKESHI KAJII*

IT IS a great pleasure and privilege to have this opportunity of describing the telephone service in Japan to the members and friends of the American Chamber of Commerce.

The Japanese telephone system was begun in Tokyo and Yokohama in 1889, and next year will mark the 70th anniversary of its inauguration.

At the start, there was much discussion whether the Japanese telecommunication enterprise should be operated by the government or by a private company. It was finally decided to be started as a government enterprise. But governmental enterprises have the great disadvantage, from the business standpoint, of having to operate under restrictive financial conditions. Shortly after its start, the telephone system could not keep up with the ever-increasing demand for telephones, and customers had to wait for very long periods after applying for service, before instruments were installed. The public, which was dissatisfied with this slow service, began to say that they would gladly pay the installation cost, if shortage of government funds was the cause of delays in installation.

Out of this situation, a system was evolved in which an applicant was to bear a part of the installation cost. At its highest point, this burden on the applicant reached the sum of 1,500 yen in those days, or about 500,000 yen at the present currency value. Another handicap was that the government drew off the profits of the telephone business, just like taxes, since some of the ministers of finance considered the telephone a luxury.

During World War II, there was little or no expansion of telephone facilities. The air raids heavily damaged the telephone exchange offices and cables. The prewar peak figure of 1.8 million telephone subscriber lines had dropped to about 500,000 at the close of the war. The situation was so bad that a telephone call could not be connected even after dialing as much as 10 times, and rainfall caused trouble after trouble on the lines. Bitter complaints from the public were lodged against such unsatisfactory service.

*Dr. Kajii is president of Japan Telegraph & Telephone Public Corp. He gave this address at a recent meeting of the American Chamber of Commerce in Tokyo.

However, with the backing of funds by the Japanese Government and the United States, strong efforts were made to rehabilitate the telecommunication facilities, and service regained its pre-war level in 1951. At the same time, the figures on the accounting books turned from red to black as the telephone rates were increased to cope with the bad deflation.

Once a certain minister of telecommunications asked me to tell him how telephone service might be improved. I asked him, "Do you yourself dial when you call a friend of yours?" He answered, "No, my secretary dials, and I talk to my friend after he answers." Then I told him that the first thing he should do is to dial the telephone himself, for otherwise he would not have a first-hand experience of how dissatisfied the subscribers are. The next thing I suggested was to turn over the telephone business from the government to a public corporation.

In consideration of the large public demand for telephone service, the government organized a committee to study the operation of the telephone business, and decided to turn over its operation to a public corporation, such as the railways and the tobacco monopoly enterprises.

The merits of a public corporation lie in the fact that the financial system is self-supporting and the profits of one year can be put back into expansions the following year. The president and vice president, appointed by the government, can devote themselves to the enterprise for a term of four years, regardless of the changes in the cabinet. Under this system, the income of the business can be increased and the expenditures saved, by encouraging the activities of the employes and raising the efficiency of the operation. If the profits can be increased through their efforts, a part of the increased profits is allowed to be used as bonuses or spent for the welfare of the employes.

The Nippon Telegraph & Telephone Public Corp. (NTTPC) law was passed in an extraordinary session of the Diet (legislature) in 1952 and went into effect on Aug. 1 of that year. After the war, the expansion program could not generally be executed as expected, for the budget lagged behind the inflation. But when rising costs came to a halt, it was time to work out a long-term expansion program on an economical basis. Our corporation mapped out its first Five-Year Expansion Program, which was to begin in 1953. However, as the annual budget had to be ap-

(Please turn to page 47)

Dr. Takeshi Kajii, president of the Japan Telegraph & Telephone Public Corp., author of the article "Telephone Service in Japan," has devoted his entire career to the telephone operating and manufacturing business. As first head of the quasi-private Japanese telephone system, he has been so successful that many Far Eastern governments have sought his assistance in creation of similar public corporations to operate their government-owned enterprises.

TELEPHONY's interest in the momentous separation of Japan's vast telephone system from direct government control has been a continuing one since early 1951, and has included conferences of the editor and many officials of the telephone system and the legislative branch of the Japanese Government.

Among our early distinguished visitors were five members of the Diet Telecommunications Committee, who visited the United States in October 1951, for the purpose of exchanging ideas on legislation needed to reorganize the government-controlled system into a public corporation.

Carrier terminal office in Tokyo. Equipment is manufactured by local industry.

Time zone repeaters for dial toll connections between Tokyo and Yokohama.

Let's Make All These

Kellogg's Color Campaign Works With You and For You To Help Sell More Color Phones In Your Community

IT'S A FACT: color phones help convince subscribers of the need for extension phones.

RESULTS: greater revenue for you, greater satisfaction for your subscriber, because the 15 smart new Kellogg K-500 colors brighten up any decor.

And one extension leads to another: a convenient wall phone in the kitchen means dad will want one for the workshop; an extension in the bedroom leads to one in the guest room. Remember to suggest color phones as gifts—it's a new, original idea, and they're always welcome!

Kellogg is helping you sell more color phones through its widely-promoted color campaign. The theme — "Brighten Life At Home With Color Phones"—is being brought to the attention of people everywhere through advertising in national magazines, local newspapers, direct mail and other powerful sales promotion tools.

Your Kellogg sales representative will be glad to explain this campaign to you and show you how it can be brought into operation in your community.

KELLOGG Switchboard & Supply Company
6650 S. Cicero Avenue, Chicago 38, Ill.
Communications Division of
International Telephone & Telegraph Corporation

Extensions Color Phones!

15 Decorative Colors!

RED • YELLOW • GREEN • BLUE • BEIGE • GRAY • BROWN
IVORY • TURQUOISE • ROSE PINK • AQUA BLUE • WHITE
LIGHT BEIGE • LIGHT GRAY • BLACK

Demonstrate how the handset of the K-554 can be hung on the side without breaking the circuit!

KELLOGG Communications Division of ITT
CHICAGO, ILLINOIS

Regional Offices and Warehouses:

CALIFORNIA
23 Broderick Road
Burlingame, Calif.
OXford 7-5780
TWX SAN MATEO CAL 06

GEORGIA
1594 Southland Circle, N.W.
Atlanta 18, Georgia
SYcamore 4-2441
TWX AT 351

ILLINOIS
4600 So. Tripp Ave.
Chicago 32, Illinois
CLiffside 4-4300
TWX CG 3296

KANSAS
7th & Sunshine Road
Kansas City 15, Kansas
MAyfair 1-4418
TWX KC KAN 1055

MINNESOTA
6100 Excelsior Blvd.
Minneapolis 16, Minn.
West 9-6715
TWX MP 1195

NEW JERSEY
165 Prospect Street
Passaic, New Jersey
PRescott 9-3610
TWX PAS 1067

OHIO
1555 West Fourth Street
Mansfield, Ohio
LAfayette 4-6511
TWX MANS 0132

TEXAS
1515 Turtle Creek Blvd.
Dallas 7, Texas
RIverside 7-5191
TWX DL 02

EXPORT—165 Prospect Street, Passaic, New Jersey, PRescott 9-3610, TWX PAS 1067

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

WE ARE INFORMED that dialless telephones that recognize spoken numbers and voice-operated typewriters could result from research now in progress at Harvard University. Work in this field is being performed at the school's Division of Engineering and Applied Physics.

We are advised that the objective of the program is to separate sound into its basic components and to discover the constant elements in spoken English, regardless of the speaker. A new approach using a damped curved "that dies away like the vibration of a plucked guitar string" breaks the sound into a different kind of basic building block, Harvard officials said.

It is contended that representing the sound of the human voice takes fewer of these new curves than the sine waves, previously used in this research. Once separated, the components will be studied to determine which remain constant in different voices, it was said at the university.

If successful, it is claimed that the research program would open two broad areas of application. First, it would make possible machine recognition of speech, and, second, it might provide savings in channel width on telephone lines. That present telephone facilities carry much more information than necessary for most purposes is a recognized fact. Further, it is claimed that if a new system were built carrying only the minimum required message, about 100 times as many conversations could be transmitted over the same facility.

In this research, speech sounds are analyzed by being spoken into a microphone and transformed into patterns of light on an oscilloscope. The patterns are then photographed, and the pictures scanned by a photocell. A series of electronic filters then splits the incoming impulses into their components and analyzes them. Filters suitable to separate sounds into damped wave components are not available, but are now being designed at the university.

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We have a report from West Texas that 23 miles of aerial cable are going underground as woodpeckers win their red crown. The cable is being buried between Post and Fluvanna at a cost of $300,000 after these hard-headed birds "pecked" more than 1,000 holes in it in a single month. The red heads are probably showing their resentment as Texas takes second place as the largest state in the Union.

•

Wind & Sand is the weekly newspaper published at White Sands Missile Range, New Mexico. This name is most appropriate because during prolonged sand storms the paint and chrome are often ruined on automobiles. The glass is also converted to ground glass and must be replaced. Needless to say auto insurance is rather expensive in that area.

•

When you cross the international date line you lose a day. There's also a line on most highways where you can do even better.

•

A new, two-way, transistorized radio communication unit with range up to one mile has recently been introduced. This unit weighs only 5 pounds and operates in the 450-475 mc band. It should prove desirable for numerous short-range communications purposes.

•

For many years we considered the pole roof unnecessary, but so many utility companies are presently using them that they must perform a worth-while service.

One manufacturer states that their new pole roof is designed to protect the most vulnerable part of the pole above ground—the exposed end grain. In spite of modern pressure-treating methods, he claims that constant weathering will leach out the preservatives in the exposed pole top and eventually necessitate repair or replacement. This manufacturer supplies a pole roof made of long-life roofing material. Since they are non-metallic, there is no danger of radio interference as with metallic caps. The roofs are easy to install by the use of broad head galvanized nails.

•

We often wonder why some very good hotels continue to tolerate the old, obsolete and often inferior telephone instruments in their rooms. While these instruments may be satisfactory for local service, they are, in many cases, inadequate for toll service because of their poor transmission qualities.

The present-day traveling public makes frequent long distance calls from their hotel rooms and they are undoubtedly entitled to good service. In this connection, we are advised that the motels who have telephone service always make use of modern telephone instruments.

•

We received word recently that our long-time friend, Kenneth W. Graybill, General Telephone Laboratories consultant, and former vice president in charge of research and development for the Automatic Electric Co., has retired after more than 38 years with these manufacturing and research subsidiaries of the General Telephone System.

We first met Ken when attending the Automatic School back in January, 1927. We have kept in touch with him down through the years and have always found him willing and remarkably able to help us with our problems.

•

We hear a lot of argument these days pro and con as to whether conference rooms should be equipped with telephones. We were in a conference recently when one of the conferees was wanted on the telephone. A secretary

brought in a handset telephone, plugged it into a jack and the conversation took place. A loudspeaking telephone may be used in this manner also if several of the conferees are to be involved in the conversation. This arrangement also eliminates the danger of a telephone in a conference room being "bugged."

•

The writer recently made a trip by automobile from Washington, D. C., to Fort Monmouth, N. J., a distance of 225 miles. We drove each way in four and one-half hours and never exceeded the speed limit at any time.

Admittedly, this is good time in the congested East and it is made possible by both the new tunnel across the harbor at Baltimore to avoid its city traffic, and the New Jersey turnpike which has a speed limit of 60 mph.

The new highway between Washington and Baltimore also permits a speed of 60 mph. We are of the opinion that this record proves it pays not to exceed the speed limit because you can make good time and save gasoline, wear and tear on the car, and perhaps your life.

REA Announces Latest Telephone Allocations

THE RURAL Electrification Administration has approved the following telephone loans:

Bolivar (Mo.) Telephone Co.; $92,000; Aug. 19.

The company plans to furnish initial service to 201 farm families, and to improve service for 97 existing subscribers. The subscribers who will get improved service are now receiving magneto service from the Pleasant Hope Telephone Co. whose facilities the borrower proposes to acquire.

A new automatic central office is scheduled at Pleasant Hope. The borrower's three REA loans, totaling $718,000, will enable it to furnish new and improved service to 1,916 subscribers. The system will consist of three exchanges of which Bolivar and Morrisville are in operation, serving approximately 1,400 rural subscribers.

Joe Roberts is president and manager of the Bolivar Telephone Co.

•

St. Joseph Telephone & Telegraph Co., Port St. Joe, Fla.; $3,290,000; Aug. 19.

The new borrower plans to use these funds to furnish initial service for 2,306 subscribers, and to improve service for its 3,476 existing subscribers. The company now operates automatic exchanges at Altha, Apalachicola, Bristol, Carrabelle, Port St. Joe, Tyndall Air Force Base, and Wewahitchka; and common battery exchanges at Blountstown and Chattahoochee.

In addition to the automatic central office which the borrower plans to build at the newly established Mexico Beach exchange, the following changes are planned:

Replace the common battery facilities at Blounstown and Chattahoochee with new automatic central offices.

Construct a new office building and install new and enlarged automatic facilities at Carrabelle.

Transfer the present Carrabelle automatic switchboard to the Altha exchange.

Install new and larger automatic equipment in the Bristol exchange.

The four remaining automatic exchanges will be retained in the expanded system. Part of the funds provided in the loan will be used to aid in furnishing telephone communications for an Air Force SAGE (Semi-Automatic Ground Environment) installation in the borrower's operating area. A portion of the loan will cover interim financing of certain projects under construction while this loan application was being considered, and provision is also made to refinance indebtedness incurred by the borrower on previous construction programs.

Edward Bell is president, and J. L. Sharit is manager of the St. Joseph Telephone & Telegraph Co.

•

The North-Eastern Pennsylvania Telephone Co., Forest City, Pa.; $2,215,000; Aug. 19.

The new borrower proposes to furnish initial service for 1,426 rural subscribers and to improve service for its 3,230 existing subscribers. The North-Eastern Telephone Co. is presently furnishing dial service through exchanges at Clifford, Pleasant Mount, Thompson, and Uniondale; common battery service through Forest City and New Milford central offices, and magneto through its Harford and Jackson facilities.

The four automatic exchanges will be used in the expanded system, new automatic central offices constructed at Harford and New Milford, and a combination automatic exchange headquarters structure built in Forest City. A new automatic exchange office building has just been completed to serve the Jackson area. A portion of the loan funds will be used for refinancing the borrower's existing indebtedness incurred by the borrower on previous construction programs.

Edward Maile is president and Boyd H. Todd is manager of the North-Eastern Pennsylvania Telephone Co.

•

American Communication Co., Inc., Haddam, Kan.; $433,000; Aug. 20.

These funds will be used by the borrower to improve service for 526 existing subscribers and to furnish initial service for 83 rural families. In order to provide this new service, the borrower plans to extend its service area. The existing subscribers are now receiving magneto service from the Ionia Telephone Co., the Morganville Telephone Co., and the Webber Mutual Telephone Co. These facilities will be acquired, improved, and integrated by the American Communication Co.

New construction scheduled by the borrower includes automatic central offices at Ionia, Morganville, and Webber. This borrower has received REA loans totaling $2,157,000 which will enable it to furnish new and improved service to 4,264 rural subscribers in Kansas and in Nebraska. Ten of the proposed 16 exchanges are now in operation serving approximately 900 subscribers in the system.

George A. Rooney is president and manager of the American Communication Co.

•

Mid-Century Telephone Co-op., Canton, Ill.; $116,000; Aug. 21.

The borrower plans to use these funds to improve service for 130 rural subscribers and to furnish initial service for 90 farm families. In order to provide this service, the cooperative proposes to serve additional territory. The families which will receive improved service are now being served by the Smithfield Telephone Association, which the borrower plans to acquire, improve, and integrate. At present the Smithfield company is furnishing magneto service.

New construction scheduled by the borrower includes an automatic central office at Smithfield. The cooperative is considering service without toll charge between the new Smithfield ex-

(Please turn to page 39)

EASIER TO FINANCE...

Telephone

When selecting central office equipment, the smart buyer looks for a product that can be easily financed. That's why so many telephone men choose Strowger Automatic. You see, Strowger has a reputation for quality and dependability . . . a reputation that *can't be challenged by lending agencies.*

Are you planning to buy dial equipment for your exchange? If you specify *Strowger Automatic*, you can approach any lending agent with the positive assurance that you have chosen the most well-known, dependable and proved-in-service switching equipment available.

ASK YOUR A.E. REPRESENTATIVE for complete details. He'll be glad to show you why Strowger has earned its reputation for quality and dependability. Write Automatic Electric Sales Corporation, Northlake, Illinois. Or, call Fillmore 5-7111. In Canada, Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto 16.

AUTOMATIC ELECTRIC

Subsidiary of **GENERAL TELEPHONE**

another reason why
Men Choose Strowger!

Courts and Commissions

Injunction Denied in Business Directory Probe

Federal Judge Joseph Sam Perry on Aug. 25 refused to issue an injunction that would block a federal investigation of a Chicago business directory.

Stanley Oleck of New York, owner of the Directory Publishing Co., sought the injunction on Aug. 24 to halt an inquiry into his operation by the U. S. attorney's office, postal inspectors and the federal grand jury.

The suit named U. S. Atty. Robert Tieken and all Tieken's agents and assistants. It charged that Tieken was smearing Oleck's reputation by spearheading an investigation of the Greater Chicago Business Classified Directory published by Mr. Oleck.

The private directory lists the names of Chicago area businesses and executives. The grand jury, investigating mail frauds, is studying charges that Oleck's company has solicited ads on mail forms similar to those used for the Chicago classified telephone directory published by the Reuben H. Donnelley Corp.

Oleck asserted that publicity resulting from the grand jury probe was harming his business. Oleck asked that the investigation be called off and that a federal judge decide whether violations exist.

Judge Perry, however, in his decision said he did not have the power to destroy the processes of the executive branch of the government that permits investigation of criminal activity.

Increased Taxes Lead Kan. Company To Ask For Increase

The Craw-Kan Telephone Cooperative Association, Inc., Girard, has filed a request for a rate increase with the Kansas Corporation Commission, it was reported on Aug. 12.

The raise is sought for the company's Girard, Arma, Cherokee, Wier, Hapler, Hiattville, Brazilton, and Farlington exchanges.

The present rates were authorized on an interim basis under bond when the company converted its exchanges to automatic operation and were thought to be adequate. Increased costs however have led the cooperative to seek an increase.

The present rates were based on estimates of $12,000 for property taxes. This year, taxes will exceed $18,000 and when the conversion is completed in 1959, property taxes will come to more than $31,000.

Two Seek Increases, One Asks to Buy in Wisconsin

The Wisconsin Public Service Commission on Sept. 2 was to hear the rate raise application of the Mt. Horeb Telephone Co. On Sept. 3, the commission was scheduled to hear the application of the River Valley Mutual Telephone Co. for authority to increase rates.

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The commission on Sept. 4 was to consider the application of C. O. Deuel for authority to sell and of the Cream Valley Telephone Co., Hawkins, to buy the Gilman & Western Telephone Co. plant.

Ask Franchise Tax Raise Investigation In Ark.

The city of Sheridan asked the Arkansas Public Service Commission to check the franchise tax structure of the Allied Telephone Co. Inc., Little Rock, which serves it, according to an Aug. 22 report.

Mayor E. O. McKinney and the city council contend that the company is not paying its share of taxes to the city. They asked the commission to determine whether this is true.

The council said that it wanted to increase the Allied company's tax to the city without passing any such increases to the Allied company's subscribers.

Interim Increase in Kan.

The Kansas Corporation Commission authorized the Northern Kansas Telephone Co., Winchester, to collect higher temporary rates under bond effective Sept. 1 following conversion to automatic operation.

Appointed Florida Utility Commission Will Be Sought

A proposal that members of the Florida Railroad & Public Utilities Commission serve by appointment of the governor rather than by popular election was made on Aug. 21 by its chairman, Alan Boyd.

Announcing that he plans to seek the change from the 1959 state legislature, Mr. Boyd also suggested that the four-year terms of the commissioners be extended to at least six years.

Two of the commission's three members, Jerry W. Carter and Wilbur C. King, currently are seeking re-election for four-year terms.

Mr. Boyd stressed his proposal was not to be construed as critical of either of his fellow commissioners. In fact, he explained, one of the compelling motives for his proposal was the difficulty of mounting a successful campaign. He said it was almost impossibe to arouse sufficient public interest in a commission campaign to raise enough money to inform the voters of the issues.

The only people interested in the makeup of the commission, Boyd said, are the transportation and utility companies under its regulation, and they are prohibited by law from contributing to campaigns.

Further contending that the public would be better served by appointed officials, Boyd said that because of the complexities of the job, it takes a commissioner about two years to really know what he is doing. "He then spends the rest of the time worrying about whether he can be re-elected," Boyd added.

Mountain States Appeals In Rate Denial in Montana

Mountain States Telephone & Telegraph Co. on Aug. 21 filed notice of appeal from a district court denial of higher telephone rates in Montana (TELEPHONY, July 12).

Lewis & Clark County District Judge E. E. Fenton last June 23 rejected a company request that he allow the rate increase and prevent the Montana Pub-

WHY NORTH?

H. C. ("Red") Ryon has joined North Electric Company as Vice President in charge of the Telephone Division.

"Why North"?

Because—"Red" Ryon, one of the most widely known and respected executives in the Independent Telephone industry, knows—

North has a product line second to none. . .

- ***North Ericofon—most modern, most wanted telephone in the world***
- ***North AuTollizer®—the most reliable and economical toll ticketing***
- ***North Restricter—only proven restricter in the industry***
- ***North Crossbar—most advanced switching system in the world***
- ***North Carrier—"quickest pay-out" equipment in the field***
- ***North has a record of service and reliability since 1884***

In identifying himself and his future with North, "Red" Ryon is further strengthening the progressive management team that is already being recognized as

THE MOST DYNAMIC FORCE IN THE TELEPHONE INDUSTRY

NORTH ELECTRIC COMPANY

601 SOUTH MARKET STREET • GALION, OHIO

lic Service Commission from interfering with its collection.

The company went to court after the commission, by a two-to-one vote, ruled the proposed higher rates were not justified.

The increases sought by the company would increase its revenues, annually by an estimated 1.5 million dollars.

North Carolina Company Closes Mortgage Loan

Western Carolina Telephone Co., Weaverville, N. C., has closed a 25-year first mortgage loan with Berkshire Life Insurance Co., Pittsfield, Mass., and Connecticut General Life Insurance Co., Hartford.

Proceeds of the loan will be applied to refunding of bank loans and to extensions and improvements of the properties. This is the fourth piece of financing which the company has arranged with Berkshire Life and Connecticut General.

Rate Refusal, Three Obtain Increases in N. Y.

The New York Public Service Commission on Aug. 26 denied the petition of General Telephone Co. of Upstate New York, Inc., Johnstown, for permission to increase its rates by amounts designed to produce about $375,000 additional annual revenue (TELEPHONY, Apr. 19). The company was told, however, that if it files tariff amendments which will limit the revenue increase to a maximum of $100,000, such new rates would be allowed to go into effect.

The commission's decision was based upon a determination that the company's proposed new rates "would result in an excessive amount for return and rate of return" but that the company "had indicated a need for an increase of about $100,000 in gross operating revenues."

In seeking permission to increase its rates, the company claimed that its present rates, which have been in effect since June 1952, are insufficient to permit a fair rate of return on the fair value of its telephone plant. It estimated that its annual operating expenses would increase by almost $191,000, a large percentage of which was attributable to wage increases.

In a report to the commission based on public hearings on the matter, Examiner William T. Wilkinson stated, however, that in computing its revenue needs, the company underestimated by $47,000 its probable receipts from toll service and other items and had overestimated some anticipated operating costs.

In this connection he notes that "the company's estimated net increase in operating expenses, unadjusted, was $175,721 based on existing rates (resulting from increased business), with estimated net increase in operating expense before taxes $235,386, or expected deficiency in revenue during 1958 of $59,665 based upon continuance of the present rates and charges."

In proposing its new rates, the company said they would provide it with a 7.14 per cent rate of return on the fair value of its telephone plant. Mr. Wilkinson commented that such rate of return would be "somewhat excessive" and that a combination of the additional revenues to be derived from new customers plus a $100,000 increase over present rates "will produce an estimated return of approximately 6.5 per cent," an amount deemed sufficient for company requirements.

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In other actions the commission on Aug. 26 accepted a tariff amendment filed by Cape Vincent Telephone Co., Inc., designed to produce about $4,600 additional annual revenue. The company provides dial telephone service to about 600 stations in and near Cape Vincent.

In filing its new tariff, the company reported that the additional revenues to be derived from it were needed to meet higher operating costs, to enable it to continue adequate service and to earn a fair return on its investment. In this connection, the company said its operating expenses for the next 12 months will exceed those for 1957 by more than $2,200.

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The commission also on Aug. 26 accepted a tariff amendment filed by Cassadaga Telephone Corp. It is estimated that the new rates will produce about $4,950 additional annual revenue to partially offset operating expense increases of about $6,850.

The company provides dial service to about 700 stations in and near Cassadaga, Lily Dale and Stockton. It also provides toll-free service to the Sinclairville exchange of Jamestown Telephone Corp. and to the Fredonia exchange of Dunkirk and Fredonia Telephone Corp., thereby enabling its subscribers to call about 5,100 additional telephone stations in those communities.

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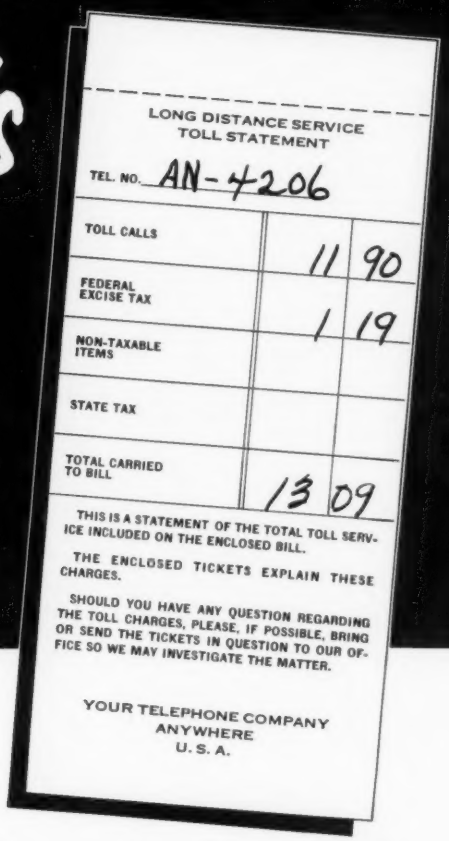
The commission on Aug. 27 approved a tariff amendment filed by West Valley Telephone Co.

The company serves 330 subscribers in and near West Valley, Ashford Hollow, East Ashford and Riceville. It also

Georgia's one millionth telephone was installed in Homerville, Ga., recently. At a special banquet for the millionth telephone celebration, C. L. Pilcher, member of the Georgia Public Service Commission, dialed the first call to the Georgia Chamber of Commerce President, Edgar J. Forio in Atlanta. Downing Musgrove, president of the Georgia Telephone Association, acted as master of ceremonies at the banquet held in the elementary school. Ben Gilmer, president of the Southern Bell Telephone Co., cited various phases of progress in the telephone industry in the state. According to Downing Musgrove, it took until 1949 for Georgia to gain 500,000 telephones. In nine years since then, 500,000 more have been added. Inspecting the millionth telephone are (Left to Right) J. S. Seigle, Southern Bell vice president and general manager for Georgia; E. C. Weitzell, Rural Electrification Administration; Mr. Musgrove, and Mr. Gilmer.

200 calls or 2

Your toll bills will look like this


LONG DISTANCE SERVICE
TOLL STATEMENT
TEL. NO. AN-4206
TOLL CALLS 11 90
FEDERAL EXCISE TAX 1 19
NON-TAXABLE ITEMS
STATE TAX
TOTAL CARRIED TO BILL 13 09
THIS IS A STATEMENT OF THE TOTAL TOLL SERVICE INCLUDED ON THE ENCLOSED BILL.
THE ENCLOSED TICKETS EXPLAIN THESE CHARGES.
SHOULD YOU HAVE ANY QUESTION REGARDING THE TOLL CHARGES, PLEASE, IF POSSIBLE, BRING OR SEND THE TICKETS IN QUESTION TO OUR OFFICE SO WE MAY INVESTIGATE THE MATTER.
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Only 5 entries per bill at the most—regardless of the number of calls. That's how Recordak Toll Billing boils down the job.

No longer will you itemize each call. No need to because you microfilm your toll tickets—for the office record—and send them out with the bill. The savings in billing time are great—40% or more reported by independent companies of every size. And the microfilming costs are so surprisingly low that it pays even the smallest companies to use this unique system.

Look—you can purchase a Recordak Junior Microfilmer for as little as $550. Or rent one at low monthly cost. Anyone can operate it . . . take 40 or more pictures per minute. And you can put 3000 toll-ticket pictures on just 60¢ worth of film, which can be purchased with or without processing cost included. *You just can't beat the value!*

Recordak Junior Microfilmer—one of five different models designed for varying requirements.

Subscribers—everywhere—favor new system

When you return the toll tickets you give subscribers the complete story on every charge. Questions are answered in advance . . . annoyances cease for them *and you*. What's more, you can count on bills being paid faster.

Write today for free folder giving complete details on Recordak Toll Billing System.

Price quoted is subject to change without notice.

"Recordak" is a trademark

RECORDAK

(Subsidiary of Eastman Kodak Company)

originator of modern microfilming—
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Please send folder describing Recordak Toll Billing System in detail.

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Company_____

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City_____ State_____

provides toll-free service to subscribers of the Springville exchange of New York Telephone Co., thereby enabling its customers to call any of the 2,275 telephones in that community.

West Valley's rate base has increased from $35,100 in 1957 to $124,250 at present as a result of its conversion to dial service on Aug. 15. In filing its new tariff, the company reported an operating loss of $908 in 1957. The new rates are expected to produce about $3,450 additional annual revenue.

Request Stock; Three Sale Approvals In Illinois

The Illinois Commerce Commission was scheduled to hear the following applications:

On Sept. 2, the application of the Middle States Telephone Co. of Illinois, Des Plaines, for authority to issue and sell up to 36,000 shares of common stock of the par value of $10 each.

On Sept. 3, application for the sale of the Moultrie County Telephone Co., Lovington, to the Moultrie Independent Telephone Co. and of the Moultrie Independent Telephone Co. to operate a telephone company in the village of Lovington.

Also on Sept. 3, the application of the Hecker Farmers' Telephone Association to sell its property to the Millstadt Telephone Co.

On Sept. 4, the application of the Midland Telephone Co. to purchase the Home Telephone Co. of Arenzville.

B. S. Gilmer Gives Address; Awarded Honorary Degree

Ben S. Gilmer, president of Southern Bell Telephone Co. was awarded an honorary doctoral degree by the Alabama Polytechnic Institute at commencement exercises in Auburn, Ala., on Aug. 23.

Mr. Gilmer also delivered the commencement address. In his speech, he predicted a future of "challenge and opportunity" for the 618 members of the graduating class.

Mr. Gilmer received his bachelor's degree in electrical engineering from Auburn in 1926.

General System Announces Six Personnel Changes

Six organizational changes within General Telephone System were announced recently.

Robert H. Henderson was elected to the position of vice president-revenue requirements for General Telephone Co. of Ohio, effective Aug. 16. He has served as controller for the Ohio company since 1951.

Herbert J. Vrooman succeeds Mr. Henderson as controller, effective Aug. 16. Mr. Vrooman formerly held the position of secretary and treasurer of the Ohio company.

Joseph G. Schroeck was promoted to assistant controller for General Telephone Co. of Ohio, effective Aug. 16. Prior to his appointment, he was general accounting supervisor.

George M. White Jr. was promoted to the position of general commercial manager of General Telephone Co. of the Northwest, beginning Aug. 1. Since Dec. 1, 1957 he has been general commercial supervisor in the Spokane general office.

Gerald S. Storrs will be transferred in September to General Telephone Service Corp. in New York as training and recruitment supervisor in the personnel department. Presently he is an engineer in research and planning in General's California company.

Richard C. Schneider will join the merchandising department under R. Parker Sullivan, vice president-merchandising in New York in September. He currently holds the position of training and recruitment supervisor in General's Indiana company.

DDD and Other Developments Cited in National Magazines

"LAST MONTH I sat at a telephone in New York City and, by simply turning the dial, got a number in San Francisco, then others in Dallas, Denver, Washington, Chicago and Portland, Ore. The total time to get connections with all six numbers, including my dialing time, added up to only three minutes, 31 seconds—35 seconds a call compared with the Bell System's average of 72 seconds for operator-handled long-distance calls."

This plus a great deal more valuable publicity on what the telephone industry is planning appears in the September *Reader's Digest* as a condensation of an article written for *Popular Science Monthly* by Don Wharton and titled: "DDD and other Telephone Wonders."

Mr. Wharton tells the extent of Direct Distance Dialing (DDD)—10 million calls per week now with 6 million telephones connected for it—and goes on to describe how area numbers were chosen, what mechanisms make DDD possible, and how person-to-person DDD calls are made.

He observes: "Among telephone people there is no thought that DDD is the ultimate in telephony. Field tests under way right now indicate that within a few years our telephones will be greatly changed." Then he thumbnail-sketched five of the major changes. They are:

Replacement of dial wheels by keys to be punched.

Substitution of seven-digit telephone numbers for 2L-5N numbering.

Obtaining of many local numbers without dialing or keying—by use of an instrument loaded so as to dial automatically numbers used most frequently.

More use of hands-free telephones and conference-type calls involving not only businessmen but also families.

Replacement of today's bell with a tone-ringer.

Mr. Wharton says, in the *Reader's Digest* conclusion, "Forty years after inventing the telephone, Alexander Graham Bell said: 'Leave the beaten track occasionally and dive into the woods. You will be certain to find something you have never seen before.' That's what the telephone people are doing."

Obituaries

CHARLES E. TAYLOR, 84, secretary-treasurer and a director of the Columbia (Pa.) Telephone Co. died on Aug. 21.

Mr. Taylor was a graduate of the Pierce School of Business Administration in Philadelphia. He had been secretary-treasurer of the Columbia company since 1904.

From 1923 until 1934 he served as Columbia's postmaster. He also held the position of county clerk.

Mr. Taylor is survived by his wife, Meena Welsh Taylor, two nieces and a nephew.

•

PETER H. TROY, 90, board chairman and former president of the Red Hook Telephone Co., Rhinebeck, N. Y., died on Aug. 23.

Mr. Troy was also a retired stockbroker who had operated his own brokerage firm in Poughkeepsie.

He began his business career as a telegrapher with the Western Union Telegraph Co. in 1883. He was president of the Red Hook company from 1945 to 1950 when he became chairman of the board.

Survivors include his son, Peter Frank Troy and three daughters, Mrs. Walter H. Warner, Miss Helen Taylor Troy and Miss Frances Dee Troy.

TOLL TICKETING EQUIPMENT

(continued from page 18)

such as the line finder group circuit and send switches in the director.

Contact Erosion. Erosion caused by sparking or burning of contacts is a problem to consider and check during routine operation testing of individual circuits, especially during the shakedown period on new equipment. When operating automatic routiners, associated with common equipment, a remote control feature should be used at least on a supplementary basis so that the switchman can stand in front of the equipment and observe it during its operation, and, thus, pickup and correct excessive sparking of contacts, ragged operation of rotary switches, etc.

Over-All Tests. In working with connecting companies, marginal pulsing, supervision and transmission testing on an over-all basis should be scheduled with a close routine frequency at the start of DDD operations. The schedule should be extended as the rate of trouble decreases in density and stabilizes. Testing equipment should be compatible and acceptable to both companies.

"Not Found" Trouble Patterns. The loss of operator guidance of calls and holding for trace opportunities deprives us of an important source of information. The "not found" troubles should be continuously scrutinized for relationship to others in an effort to reveal the cause, which might result from some obscure common equipment condition.

Trouble Expectancy. Trouble types, using a coding system, should be developed for each local office operation. They should be based on monthly and annual results for trouble types for which there is normally enough trouble to make them useful as a performance guide. The type of troubles necessarily should conform with the eccentricities of your system. They would probably include such types as: Wrong number reached by route and destination, false flashes, wrong supervision, no ring, no answer, cross talk, noisy, can't hear, dial tone returns and others.

Routine Tests. Routine test equipment for checking the accuracy of ticketing equipment is usually furnished by the manufacturer. The tests applied should be analyzed and, if necessary, extended by manufacturer's agreement to engineering modifications that fit individual needs.

Supplementary Tests. Equipment functions that are not tested in the routine cycle may be required to provide other marginal requirements and to check the accuracy and reliability of such things as conversation timing, supervisory alarms, and proper recording of tape information.

The people in maintenance are basically "operations engineers," and with DDD, they will have challenging problems to solve and new duties to perform. They not only keep the machine in running condition; they also drive it. They are the fifth wheel, the steering wheel, the Argus-eyed guardian of the communications art.

It is up to maintenance people to know and feel the importance of their calling, and, it is necessary for the industry to recognize their importance, so that Independent telephone companies may continue to grow, prosper and maintain their position as: "A Vibrant, Dynamic Force most necessary to the Economic and Social American Way of Life."

REA LOAN ALLOCATIONS

(continued from page 31)

change and Marietta, one of the borrower's present exchanges.

REA loans to this borrower total $669,000, which will make possible new and improved service to 1,444 rural subscribers. The system will consist of six exchanges of which five are in operation furnishing dial service to approximately 950 subscribers.

Sidney F. Smith is president and Clyde Eskridge is manager of the Mid-Century Telephone Co-op.

•

Sanborn Telephone Co-op., Inc., Woonsocket, S. D.; $149,000; Aug. 21.

The company will use the loan to improve service for 122 rural subscribers and to furnish initial service to 101 farm families. In order to provide this new service, the cooperative plans to serve additional territory. The existing subscribers are now receiving magneto service from the Letcher Telephone Co. These facilities will be acquired, improved, and integrated by the cooperative. A new automatic central office is scheduled at Letcher. The borrower is considering service without toll charge between the new Letcher exchange and the present Woonsocket area.

REA loans to the Sanborn cooperative total $946,000, which will make possible new and improved service for 1,418 rural subscribers. The completed system will consist of five exchanges. Those at Forestburg and Woonsocket are now in operation.

Alfred Godfrey is president and Raymond Judy is manager of the Sanborn Telephone Co-op.

•

Citizens Telephone Co-op., Inc., New Auburn, Wis.; $32,000; Aug. 21.

This loan will be used to construct a new combination headquarters and automatic central office building at New Auburn. In addition, the funds will be used to complete the previously authorized system.

The two REA loans to the borrower total $367,000 which will finance new and improved service to 705 rural subscribers. The system when completed will consist of automatic central offices at Canton and New Auburn. The borrower plans to cutover both exchanges early in 1959.

Orville Moe is the president of Citizens Telephone Co-op., Inc., and Harry Thomto is manager.

Korean Republic Plans Telephone Expansion

Korean Republic Communications Minister Eung Joon Lee said on Aug. 11 that his nation's telephone facilities will be further expanded and improved to provide more satisfactory services to subscribers.

The minister made the statement at the Central Telephone Office in Seoul in a ceremony marking the attainment of 20,000 telephones in the capital city.

He said the number of telephones in Seoul as of Aug. 11 reached 20,201, representing more than a 60 per cent increase over 1950.

In five years there will be 60,000 telephones operating in the capital city and in three years there will be 80,000 in the Republic, as a result of a telephone expansion program supported by a $16,710,000 five-year ICA (International Cooperation Administration) technical aid plan and government funds, according to the ministry.

McRae, Crosland Elected AT&T Vice Presidents

James W. McRae and Edward B. Crosland on Aug. 20 were elected vice presidents of the American Telephone & Telegraph Co.

Mr. McRae, vice president of the Western Electric Co. and president of the Sandia Corp., a Western Electric subsidiary, will be coordinator of defense activities for the Bell System. The Sandia Corp. manages the Sandia Laboratory of the Atomic Energy Com-

Crapo

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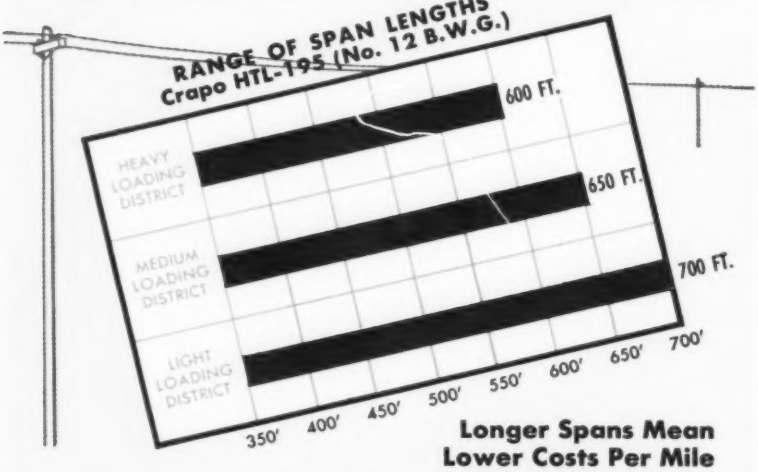
The NEW LOWER Resistance Extra-High Tensile Line Wire

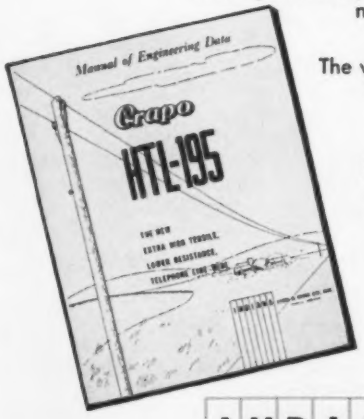


Longer Spans Mean Lower Costs Per Mile

You can cut the number of pole structures to a minimum when you use **Crapo** HTL-195 in building rural telephone lines. Extra long span construction, made possible by the high physical strength of this new wire, means marked savings in material and installation costs.

The voice transmission quality of **Crapo** HTL-195 is equal to that of **Crapo** HTL-135 and superior to older grades of ferrous wire.

Pertinent technical data have been prepared to assist engineers in designing and building extra long span lines with **Crapo** HTL-195.



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INDIANA STEEL & WIRE COMPANY, INC.
MUNCIE, INDIANA

mission on a non-profit basis. This laboratory develops, designs and tests atomic weapons. The Bell System was asked by the government to take over its management in 1949.

Mr. Crosland, assistant to the president of AT&T, will continue to be responsible for regulatory matters involving the Federal Communications Commission and the National Association of Railroad & Utility Commissioners.

Subsequent to the AT&T board action, the directors of Western Electric and Sandia elected J. P. Molnar to succeed Mr. McRae as vice president of Western and president of Sandia. Mr. Molnar is vice president of the Bell Telephone Laboratories in charge of one of the research areas devoted to military programs.

Mr. Crosland's change is effective immediately, the others on Oct. 1.

MANAGEMENT PROGRAMS

(continued from page 24)

who must deal with a variety of problems.

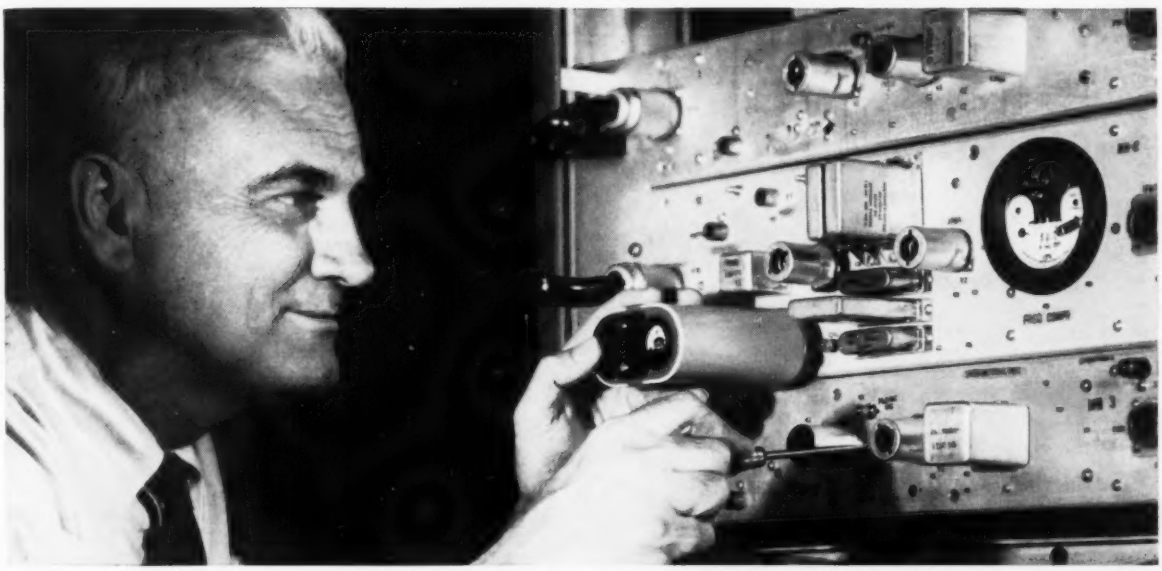
Guest speakers at the Workshop included: Donald C. Power, president of General Telephone Corp.; Dr. Chris Argyris, well-known authority in the field of industrial administration, from Yale University; Harllee Branch Jr., president of The Southern Co.; Frederick G. Lippert, director of personnel administration of American Electric Power Co.; Kendrick Porter, management consultant associated with Wallace Clark & Co.; Dr. Daniel R. Davies, director of the Cooperative Center for Educational Administration at Teachers College, Columbia University; and Dr. Mottram Torre of the School of Public Health & Administrative Medicine, Columbia University.

A highlight of the first week of the program was a panel of behavioral scientists who based their discussion of human relations on a series of actual problems representing typical industrial situations presented to them by the Workshop participants. The panel was moderated by Dr. Lyman Bryson, also moderator of the CBS program, "Invitation to Learning," and a leader in the adult education movement in this country. The other panel members are Columbia University anthropologist, Dr. Conrad Arensberg; Dr. Goodwin Watson, authority on education, Teachers College, Columbia University; and Dr. Walter D. Woodward, consulting psychiatrist for American Cyanamid Co.

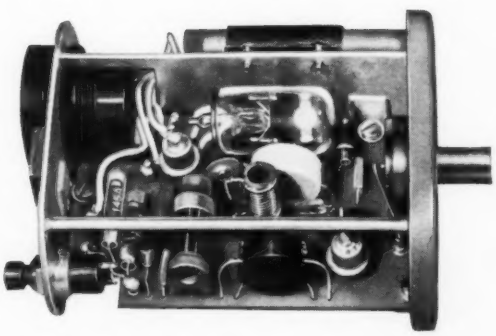
University of Hawaii

The Advanced Management Program of the University of Hawaii was started

Bell Laboratories Announces Pocket-Sized Frequency Standard for Microwave Systems



Lawrence Koerner, who developed the portable frequency standard, demonstrates how the device can be plugged in at a radio relay station to supply a checking frequency. Battery-powered, the device maintains precision calibration for several months.



Inside the portable frequency standard. Four Laboratories-developed devices make it possible: (1) transistor, which converts the power from a battery to radio frequency oscillations; (2) voltage reference diode, which maintains constant voltage; (3) piezoelectric crystal unit of superlative stability; (4) thermistor, which corrects for temperature variations.

Microwave radio relay systems depend critically on the accuracy of their "carrier" frequencies. At scores of relay stations along a route, carrier frequency oscillators must be checked periodically against a signal from a precise standard.

In the past, the maintenance man has had to obtain his checking frequency by picking up a standard radio signal from a government station. This operation takes time—and requires elaborate equipment.

With a new *portable* frequency standard developed by Bell Laboratories engineers, the job is much simplified. To check an oscillator, the portable standard is plugged in, and a button is pressed. In seconds, it supplies a checking frequency accurate to one part in a million.

Until now, such precision in a frequency standard has been obtainable only in a laboratory. The new portable standard makes it available for routine use in the Bell System. First use of the standard will be to maintain frequency control in a new microwave system for telephone and TV, now under development at Bell Laboratories.

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Use this fast portable trencher for cable, pipe, tubing, conduit

POW-R-SPADE narrow trenches cost 1c to 5c per foot including labor.

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Saves 80% - 90% cost and time compared to sub-contract or hand digging.

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Ready to go on the job, at once — no costly waiting around.

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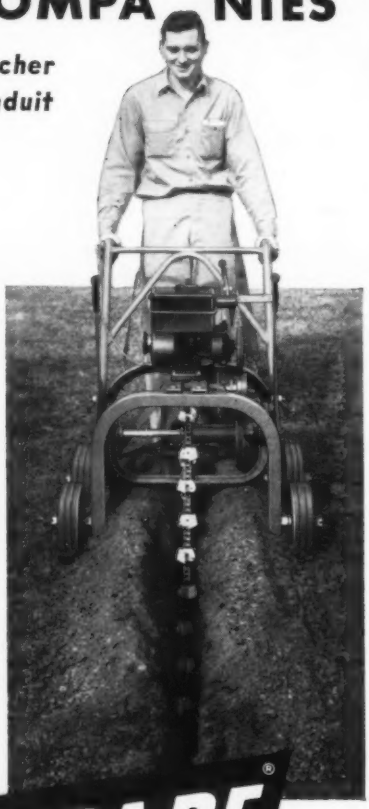
Can pay for itself in one day's operation.



POW-R-SPADE digs a neat 3" wide trench. Dirt is delivered well pulverized on each side of trench — no lumps or clods. Easy to back fill.

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Portable from job to job. Easily handled by one man.

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A rugged machine. Easy to set and to operate. Oil-sealed bearings. Powered by a well-known engine. Minimum maintenance. Shipped completely assembled, ready to go to work for you. Additional interesting details and information immediately yours upon return of the coupon.

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in the summer of 1954 as a result of a request from Hawaii business leaders for such a program. It was desired that the University work with the Harvard Graduate School of Business Administration in presenting a course of instruction for senior business executives that would provide greater opportunities for general management training than were then available within a reasonable distance.

The local community desired that opportunity be afforded for an exchange of ideas and points of view with Mainland business executives and men from the Armed Services and with leaders in industry from other countries bordering the Pacific.

It was found to be possible to have all instruction presented by a staff from the Harvard Business School and the program has been modeled after the Harvard Advanced Management Program.

The University of Hawaii has held one session each year during the summer since 1954. The current session is therefore the fifth.

The six-week summer program at the University is an intensive, full-time study and discussion experience. Careful preparation is required, for the program is a working program. With small classes, each member of the group is a responsible participant. He recognizes the value of the individual contribution from representatives of a wide variety of companies, countries, industries and backgrounds.

Executives who attended the Advanced Management Program went to class three hours each morning for six days a week. They engaged in individual study in the afternoon and participated in small discussion groups in the evening in Castle Hall on the Punahou Campus.

A primary objective of the Program is to make each participant a better man in his own job. Another and more significant objective is the development of men for advancement to positions with wider responsibilities.

Through case studies of actual business situations in which executives are facing problems and taking action, men have an opportunity to acquire a broader view of business problems—one that goes beyond the specific departmental or functional aspects of an individual man's interests and embraces the company-wide inter-relationships among all departments and functions.

The course considers the impact of business decisions on the public welfare and in turn examines the effect of public policies upon private business enterprise.

Specific training in administrative

practices, policies, and procedures through case discussion is designed to make each man a more effective executive in any position he holds.

The development of the Advanced Management Program depended upon the support given by the sponsoring executives, an advisory committee, the officials of the University of Hawaii and the Punahou School.

This year, as in past years, telephone men took part in the Advanced Management Program in Hawaii. Among the participants this year were James S. Hodgins, manager of Hawaiian Telephone Co.'s Kauai system, and Ralph H. Smythe, regional manager, Atlanta, Ga., Kellogg Switchboard & Supply Co.

* * *

A fifth university, the University of Michigan, Ann Arbor, has conducted two sessions of a Public Utility Executive Program. Nine telephone men are reported to have attended the first session. A summary of this program will appear in TELEPHONY in the near future.

Italy Lags In Telephones, Ministry Reports

Italy has many communities which are still without telephones, and cannot hope to arrange service for all of them before another decade, according to a recent official publication of the Ministry of Telephones and Telegraphs.

Only a few of the 66,000 smallest hamlets have telephones and only 3,000 of the 24,000 "inhabited centers," the next largest type of community. "Hamlets" have at least five families and "inhabited centers" have a church, a school, a post office, shops, a few streets and a community square.

The idea would be to get telephones to those of the 66,000 hamlets which have no roads and are now cut off from the world.

But, the best Italy can hope to do between now and 1968, according to the ministry's magazine, is to arrange service for the 21,000 inhabited centers for which there are no present provisions.

This will cost the ministry about 500 million dollars. The ministry has under study a project for supplying the first telephone lines to 18,000 communities.

Italy has slightly more than two telephones for every 100 inhabitants—one of the lowest rates in Europe. About half of the telephones are concentrated at Rome and the modern northern industrial city of Milan.

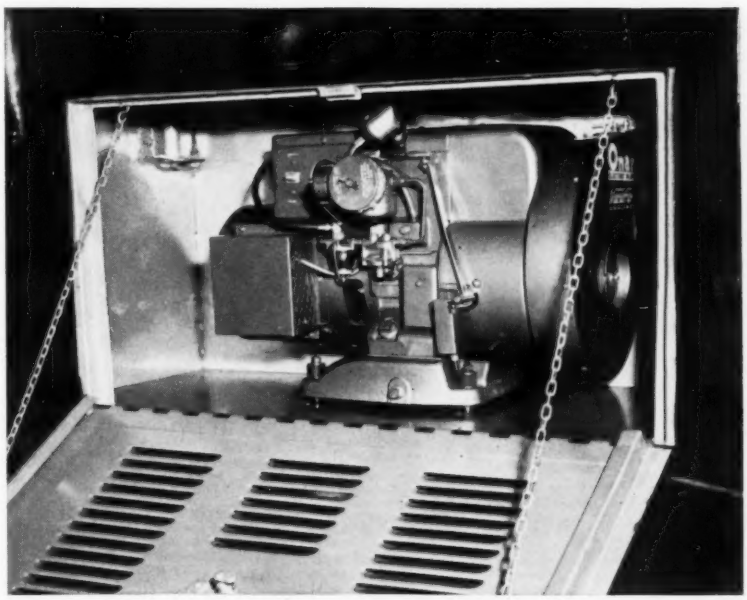
Point of View

"All looks yellow to the jaundiced eye."—POPE.

Onan ELECTRIC PLANTS

ELECTRIC PLANT NEWS

Onan ELECTRIC PLANTS



New dual-purpose Onan plants deliver A.C. power for tools; 30 amps for battery charging!

1,000 and 2,000-watt models available

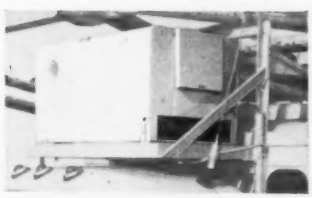
Mounted in maintenance and construction vehicles, these two new Onan Electric Plants cut costs two ways.

First, they provide plenty of plug-in A.C. power for floodlights and motor-driven tools.

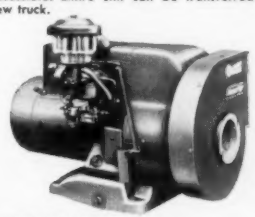
Second, they keep communication batteries charged without running the truck engine. The 30-ampere, 12-volt output handles the drain of 2-way radio and battery-powered lighting.

The difference in fuel cost between the single-cylinder Onan engines in the 2 to 4 H.P. range and truck engines of 150 H.P. or more has been reported as high as $800.00 per year or approximately twice the cost of the 1KW plant. To these fuel savings must be added savings in engine maintenance and reduction in labor costs.

These plants can be mounted within the truck body or above the cab in an Onan weatherproof steel housing. Leading body builders will install them to order. Plants are electrically started from the truck cab. Separate charging circuit keeps starting batteries charged. Call your Onan distributor for the whole story.



OVER-THE-CAB MOUNTING
Protected by Onan steel housing. Plant easily accessible. Entire unit can be transferred to new truck.



MODEL 1AJ-1RV1330
1,000 watts, 115 volts, 60-cycle with 30-amp. 12-volt battery charging output. One-cylinder, air-cooled Onan AJ engine.

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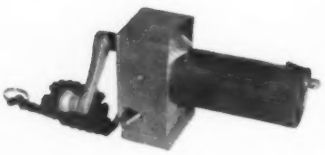
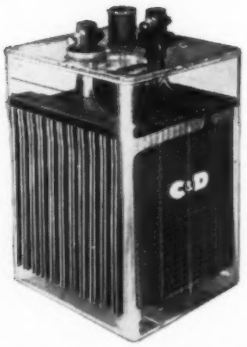
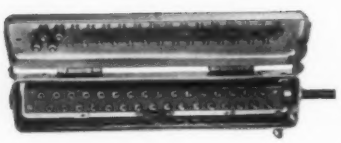


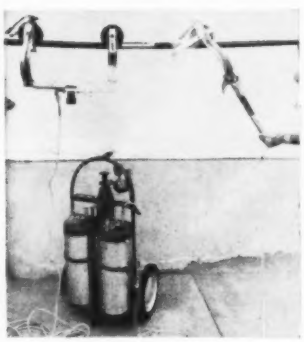
Sleevemaster is designed to split sleeves safer and with less effort. In splitting the sleeve, a small bead is formed on the inside edge of a perfectly straight cut with parallel faces. When constricted, makes tight joint for easy soldering. Made by CABLE SPINNING EQUIPMENT COMPANY.



Extra-Long Life!—The suspended and supported plate construction is an exclusive feature of C&D BATTERIES. Choose C&D PlastiCal (lead-calcium grid) for life expectancy of 25 years . . . for 14 years expectancy, specify PlastiCell (high tensile lead alloy grids). Made by C&D BATTERIES, INC.



This Cook Stranterm is available in 6, 11, and 16 pair. The only strand-mounted Cable Terminal designed for a flexible system of Minigap or Mytigap protection. Supplied with either plastic or lead sheathed cable stub.
COOK ELECTRIC COMPANY.

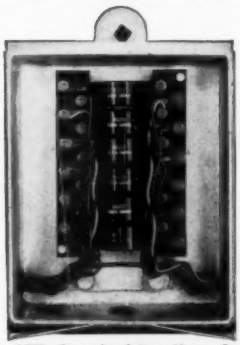


Cable Leak Detector—Two models are illustrated. Model at left is for high cables. Nozzles spray cable, air pressure from tanks causes air bubbles clearly seen from ground. S & G MANUFACTURING CORPORATION.

It is good business to have supplies available when you need them so that your linemen are not held up. But you do not have to tie up a large amount of capital. Kellogg will back up your inventory for you. Many operating companies rely on Kellogg to do this because Kellogg devotes more warehouse space to serving the Independent Telephone Industry than anyone else in the business The supplies are in stock waiting for you. Shipments are prompt. You get the supplies you want, *when* you want them!

supply inventories for you

Save Three Ways . . . on materials, man-hours, and maintenance with INDIANA STEEL & WIRE CO.'s Crapo HTL-85 and HTL-135 Line Wire. Galvanized by the famous Crapo Galvanizing Process, protected with heavy ductile coating of zinc.



Type 177 Terminal-Loading Case. A cast aluminum combination terminal box and housing for loading coils. For use with the new rural distribution wire for 6, 11 and 16-pair capacity. Available in 8 types. Terminals, available with or without protectors, accommodate loading coils of 88MH or 44MH inductance. COMMUNICATION EQUIPMENT & ENGINEERING CO.

Dependable Power! Hundreds of telephone exchanges throughout the world attest to the low first cost, low operating cost, and thoroughly dependable service of Electrox Battery Eliminators and Chargers. Made by the SCHAUER MANUFACTURING CORP.

Kellogg's Standard Outside Plant Handbook now available at special price while quantities last. Reduced to $2.75 a copy, with ten or more copies priced at $2.50 each. Every phase of outside plant telephone pole line construction is covered in book.

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TWX: KC-686

Export Distributor
International Standard Electric Corp.
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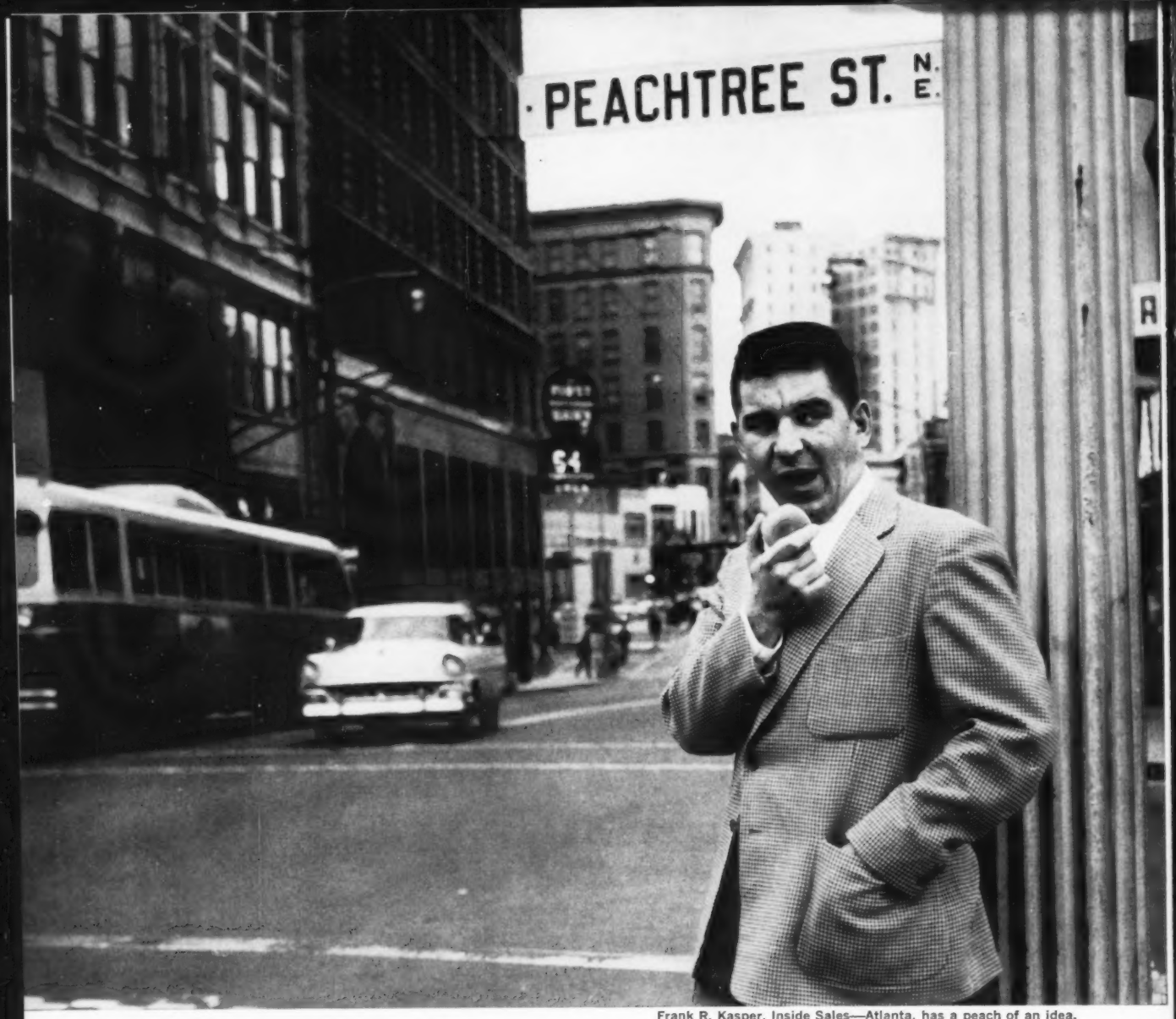
New York 7, New York



Frank R. Kasper, Inside Sales—Atlanta, has a peach of an idea.

He has "Georgia" on his mind!

Everything's fine along Peachtree Street and across the Peach State, reports Frank Kasper of the Stromberg-Carlson branch office down in Atlanta.

Frank and his fellow co-workers aren't going out on a limb when they express satisfaction with your acceptance of construction and maintenance supplies distributed by Stromberg-Carlson.

In Georgia and elsewhere you're responding not only to the quality of the supplies, but to the way they're distributed. We spare no effort to give you *fast* service (overnight delivery to many locations on items carried in stock); *personalized* service (careful attention to your every need); *complete* service (no order is too large or too small). We try to stock the important items required for outside plant construction, but if you want "another brand" or some specialty item, you can depend on us to get it for you—fast—it's all part of our personalized expediting service.

And here's an important plus: a very real part of our earnings from your supply business is poured back into the development of new equipment to help make your business more profitable.

That's why it's a peach of an idea to order supplies from the Stromberg-Carlson branch in your area.

In Atlanta our Sales Office and Warehouse is located at

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SALES OFFICES: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

Electronic and communication products for home, industry and defense

TELEPHONE SERVICE IN JAPAN

(continued from page 27)

proved by the Diet each year, a fixed plan for raising the necessary funds could not be established. We nevertheless went ahead within the limits of what was feasible.

The outline of this program involved the following points:

(1) To lay special emphasis on the improvement of service in six major cities such as Tokyo and Osaka.

(2) In addition to public telephone booths, to install red public telephones in shops.

(3) To achieve an increase of 700,000 subscriber lines and 1,180,000 kilometers of toll, or long distance, lines during the five-year period.

(4) The funds expected to be required for the first five-year program were estimated at 277.2 billion yen (770 million dollars).

The first Five-Year Expansion Program was finished in March this year. The results showed an increase of 1,080,000 subscriber lines, or 50 per cent more than planned, and an increase of 2.5 million kilometers of toll lines, or about double of the kilometers planned. The funds spent amounted to 288.8 billion yen (about 800 million dollars).

Roughly speaking, this increase in subscriber lines during these five years was as large as all the subscriber lines installed during 60 years of the prewar era. And the "no-hang-up" service on long distance calls, which had never been available in the prewar years, has now been put into operation between principal towns and cities from Sapporo in the north to Fukuoka in the south.

Amusing things happened when the "no-hang-up" service was first put into effect. The president of a certain company in Osaka ordered his secretary to place a long distance call to Tokyo at 9 o'clock the following morning, as had been customary, in order that the call would get through to Tokyo by the time the president arrived at his office later in the morning. This time it so happened that the next day was Sept. 1, the day when the "no-hang-up" service was first begun between Osaka and Toyko. When the secretary placed the call, the connection was immediately made, but, of course, the president had not arrived. After he came to his office at 10 o'clock, as usual, the call had to be placed again, with the same prompt connection.

At present the telephone traffic between Tokyo and Osaka is six times the traffic before the start of "no-hang-up" service, and it is still on the increase.

Our corporation succeeded in attaining better results than had been expected during the first five-year program, because of the free hand permitted by the government and the recent technological progress in the telecommunications field.

In technology, we learned how advanced telecommunication engineering is in the United States, and keenly felt the necessity of introducing new techniques into our enterprise and of expanding our research laboratory.

The establishment of the corporation form of enterprise has speeded up the introduction of new techniques, and it is now feasible to manufacture new types of equipment in Japan through licensing agreements and technical know-how, largely provided by American companies.

The principal technical developments in our system are as follows:

(1) The No. 4 type telephone set, which has a high degree of acoustic sensitivity.

(2) Multicarrier equipment and cables.

(3) Microwave systems, such as those operating at 2,000 megacycles and 4,000 megacycles.

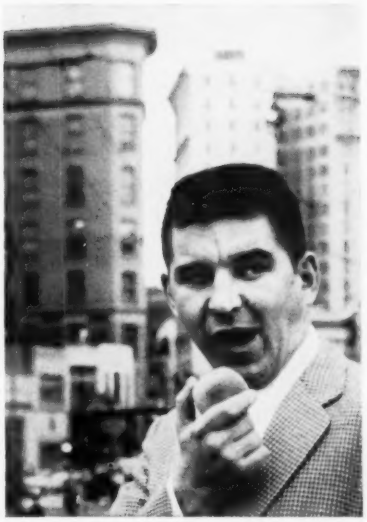
(4) The crossbar automatic exchange system.

(5) Coaxial telephone cables.

The adoption of such new techniques made it possible to economize on construction costs by 20 per cent for the past five years and to make the service more reliable than before.

At present the cost of technological development work in our laboratory amounts to about 1 per cent of our annual revenue. I would like to see this increased to about 3 per cent. In our telephone enterprise, I believe technological research and development pay high dividends in making our business flourish and in contributing to the overall prosperity of our country.

The United States of America is the most advanced country in the world in telephone service. There are 37 telephones for every 100 persons in the United States, as compared to 3.4 telephones per 100 persons in Japan. In New York City, a telephone can be installed within 2 or 3 days upon payment of $5.00. But, in Tokyo, a telephone is installed after waiting one or two years in residential districts, upon payment of 94,000 yen ($262) of which



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You get this extra-long life because C & D PlastiCal batteries have advanced lead-calcium type grid construction.

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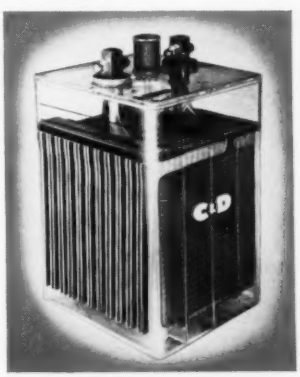

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one part is for the purchase of a bond worth 60,000 yen.

The American Telephone & Telegraph Co. has the goal of installing one telephone to every family. If the same goal were attained in Japan, the number of telephones required would amount to 20 million, or five times the present number of telephones in service. We have the prospect of expanding our business through a second stage, a third stage, etc.

The second Five-Year Expansion Program was started in April of this year, at a total expected cost of 410 billion yen (about 1.14 billion dollars). This program involves the addition of 1,350,000 subscriber lines and 4.3 million kilometers of toll lines. The budget for 1958 is 75 billion yen (about 210 million dollars). After five years, it is expected that 77 per cent of the entire system will have dial service and 60 per cent of the long distance system will enjoy "no-hang-up" service.

The following items are important parts of the second five-year program:

(1) Rationalization of telephone tariffs, or rates.

(2) Installation of 6,000 megacycle microwave systems and nationwide coaxial cable systems for telephone toll service and color television relaying.

(3) Wider introduction of transistors into telecommunications equipment and development of electronic switchboards.

(4) Public telephones to be doubled.

(5) Providing of telephones in every village in Japan. At present there are about 12,000 villages with 100 families or more, which have no telephone service.

(6) The substantial reduction of subscribers' financial burden in obtaining telephone service.

Present telephone and telegraph tariffs are, by comparative indices, very low in the price scale of commodities and services as follows:

Retail price	305
Wholesale price	347
Postage	333
Telegram	228
Telephone Message rate	233
Public telephone call rate	200

NOTE: The price index during the years 1935-1937 is considered as 100 for this table.

Since the telephone rates are not based on proper standards, there are some inconsistencies among the present rates, and we believe that such inconsistencies must be amended by real cost calculations.

By 1962, there will be four million subscriber lines and six million telephones in service. Toll calls between the major centers of all prefectures will be operated on a "no-hang-up" basis. Such an achievement foretells how much the service will be improved in the future.

Under the present circumstances, financial aid from the government is very difficult to obtain. A greater part of the expansion cost must be financed out of the corporation's own earnings, and this makes for the time being the lowering of rates and charges impracticable. However, the recent rapid progress of technology promises a favorable turn in the economic situation and profits of our enterprise.

We have about 170,000 employes in our corporation, at a proportion of two male employes to one female employe.

Japan has friendly relations with East-South Asian countries, which are undeveloped from the standpoint of telecommunications. The United States has the intention of promoting modernization of these countries by giving aid funds, and we Japanese are happy to cooperate with this effort through making available our experiences and technical advancements. Japan has to pay reparations, or some other restitution, to those countries, which I hope will be spent for their development. I eagerly desire that the United States understand the Japanese situation and allow us to cooperate with the United States for the most effective use of American aid funds.

Literary Appetites

"Some books are to be tasted, others to be swallowed and some few to be chewed and digested."—BACON.

Herbert H. Warren has been appointed New York branch sales manager of Exide Industrial Division, The Electric Storage Battery Co., Philadelphia. He succeeds John W. Weigt, who is retiring. Mr. Warren will be in charge of sales and service of Exide industrial batteries in the New York State, northern New Jersey and western Connecticut areas.

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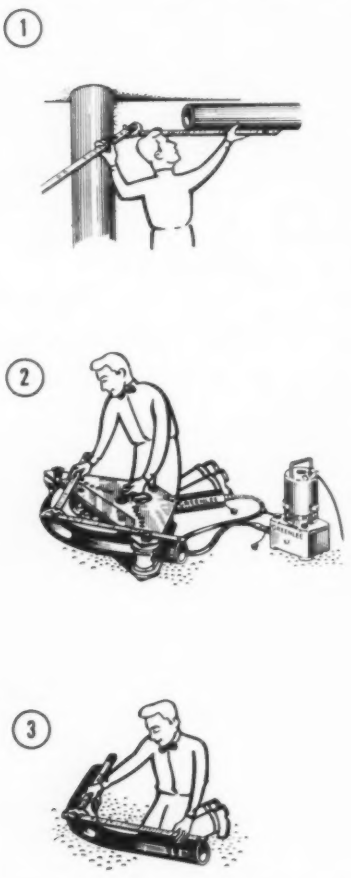
News on New Products

PIPE ANGLE BENDING GAUGE—Greenlee Tool Co. has developed the No. 1802 Angle Bending Gauge, which, the company states, satisfies a basic need and saves time when bending pipe and conduit. A special notched protractor design allows the exact degree of bend to be locked in. Made of durable zinc plated steel with black figures, the gauge has an over-all length of 70½ inches.

Illustrated in the accompanying photo are three basic time-saving uses that apply to almost every bending job:



Step 1. Determining the degree of bend needed is simplified by setting the protractor to angle desired and locking it in position.

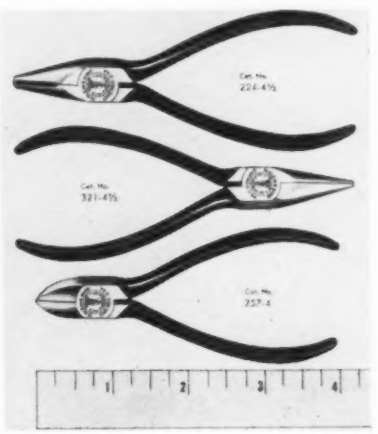
Step 2. During the bending operation the gauge can be placed on the frame for easy checking and reference. Each gauge has informative bending data plus a handy rule.

Step 3. After bend is completed, the gauge can be used to check the angle for accuracy.

Request NP944.

•

MIDGET PLIERS—Mathias Klein & Sons has just introduced a new line



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9/6/58

of midget pliers designed for delicate work in confined space.

These pliers measure from 4 inches to 4½ inches long. Four models of midget pliers are available: 257-4 oblique cutting plier; 321-4½ long nose plier; 322-4½ long nose plier with knurl, and 224-4½ long cutting plier.

All of these pliers are available with a coil spring to keep jaws open and may be had with handles plastic-dipped if desired. Request NP945.

■

DERRICKS—McCabe-Powers Body Co. announces the addition of two new "Pole-Master" hydraulic derricks to its line of Powers-American utility bodies and equipment.

The Series PM-1 "Pole-Master" *(Fig. 1)*, which is completely new in design and operation, has just been put into production. It can be furnished for installation at rear of body or at front of chassis, with hole digger if desired.

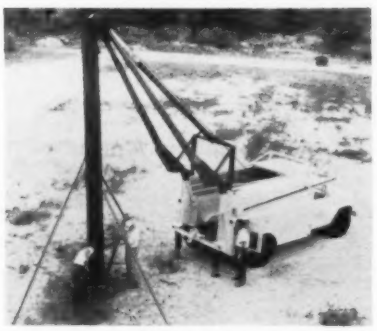


Fig. 1

All derrick movement is actuated by a single hydraulic cylinder, through a unique system of linkage which permits the positioning of the head sheave at any point in an operating arc of nearly 200 degrees.

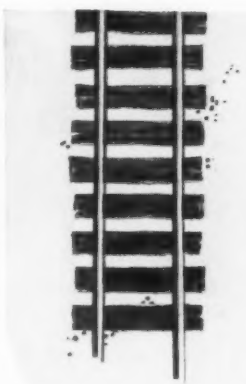
Fig. 2

Derrick is available in three sizes: Series PM-1-40 for handling poles up to 40 feet in length; Series PM-1-55 for 55 foot poles; and PM-1-70 for 70 foot poles. Respective capacities are 7,000, 8,000 and 8,000 pounds, with head sheave 4 feet to rear of body.

Also new in the line is the Series PME-2 "Pole-Master" *(Fig. 2)* which combines the advantages of an extendable head sheave with the outstanding operating features of the company's Series PM-2 hydraulic derrick.

Movement of the derrick, through an operating arc exceeding 180 degrees, is actuated by twin hydraulic cylinders. Head sheave extension is hydraulically powered, however, mechanical extension is available if desired. The derrick can be furnished with or without hydraulic digger in sizes for handling 40, 55 and 70 foot poles. With head sheave positioned 4 feet to rear of body, respective capacities are 7,000, 8,000 and 8,000 pounds. Capacity does not change when head sheave is extended or retracted with derrick in this position.

Series PM-1 and PME-2 derricks can be moved under load, and require only a single-drum winch. Controls are nor-



Telephone poles, cross ties, bridges and other wooden engineering structures treated with Reilly Creosote Oil are still in use after 50 years, because they have been guarded in service by Reilly Armed Creosote.

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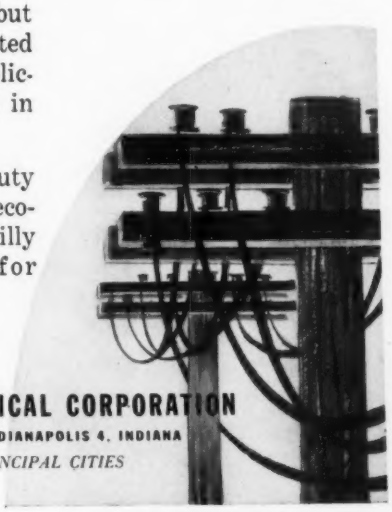
There is no guard duty so effective, and so economical. Specify Reilly Armed Creosote for wood preservation.



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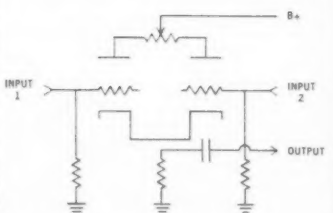
another reason for COLLINS microwave

the Diversity Combiner



In Collins space or frequency diversity systems, there are no outages due to propagation. The heart of the system is the combiner which mixes the two input signals in a weighted fashion; the signal with the greatest signal-to-noise ratio predominates. The result is up to 3 db improvement over the strongest of the two signals, and the output signal is at all times equal to or better than the strongest signal.

The combiner is completely electronic with no mechanical or moving parts and no switches with their attendant delays and transients. For maximum reliability, redundant circuitry is provided in fail-safe configuration.

This is another progressive feature of the most advanced microwave system available. For detailed information, write Collins Radio Company, Sales Service, 1930 Hi Line Drive, Dallas, Texas.

COLLINS

CREATIVE LEADER IN COMMUNICATION

mally installed in rear compartment of body, as shown in photos.

McCabe-Powers' "Sky-Master" hydraulic aerial beam *(Fig. 3)* enables workmen to reach out-of-the-way overhead work quickly and safely.

Fig. 3

This aerial unit consists of hydraulically - actuated, independently - operated beams installed on a rotating mast, with an insulated operator enclosure, or enclosures, attached to the outer beam. The mast can be turned continuously in either direction, and each beam can be moved to any point within its operating arc. Hydraulic controls are located beside the insulated work basket.

Fig. 4

Operation is simple and completely safe. When control levers are released, the work basket holds its position—even if hydraulic lines are damaged—until it is purposely moved. Models are available for one or two-man operation, in sizes for reaching work from 42 feet to 48 feet above ground.

Another unit of Powers-American aerial equipment is the Series HL-35 hydraulic aerial ladder *(Fig. 4)*, having a maximum ground-to-platform height of 35 feet. The ladder can be used at any angle up to 75 degrees, upper ladder can be extended to 12 positions spaced 1 foot apart, and mast

Fig. 5

can be rotated continuously in either direction. All movement is hydraulically powered, controlled by levers located on the ladder mast.

Ladders can be furnished with hydraulically-powered elevation and manual extension and/or rotation, or in manually-operated models. Ground-to-platform heights available range from 26 feet, 6 inches, to 35 feet.

The Powers-American Series TW-2 hydraulic aerial tower *(Fig. 5)* has an insulated platform that provides 44 square feet of work space. Two synchronized hydraulic cylinders elevate the platform to any height up to the maximum reach which enables crews to work 35 feet above ground. Dual controls permit operation from the platform or truck cab. The platform can be rotated continuously in either direction, to reach work in an area of 250 square feet without moving the truck. Towers are also available in 21-foot and 25-foot models, and can be furnished with lateral-extending platform, or stationary or special platform to fit individual needs. Request NP946.

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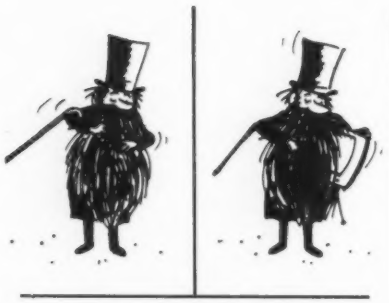

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DATA TRANSMISSION—Collins Radio Co. has announced it is marketing a new Kinetape Converter, the 768H-1 (left in photo), which when used with Collins TE-206 Kineplex Data System (right in photo) provides high speed transmission of digital data from magnetic tape over voice quality telephone circuits.

Data rate is 300 characters per second and is adaptable to either IBM or Univac tapes. Both the 768H-1 and

TE-206 are completely transistorized and employ etched circuit cards to provide high reliability.

New signaling techniques allow superior signal-to-noise performance and efficient spectrum utilization. Error detection and correction is automatically accomplished by error coding and data retransmission techniques. Request NP947.

•

POCKET RECEIVER, RADIOPHONE—At a recent press conference, Motorola, Inc., unveiled two new communications products. These are a new pocket radio receiver and transmitter *(Fig. 1)*; and a mobile radiophone *(Fig. 2)* which is about half the size of other two-way radios. Transistors are widely used in the new items.

Fig. 1

The "Handie-Talkie" pocket receiver uses 17 transistors and weighs 10½ to 12 ounces depending on the type of batteries used. The company says it can be carried on a belt or in a shirt or coat pocket. The receiver

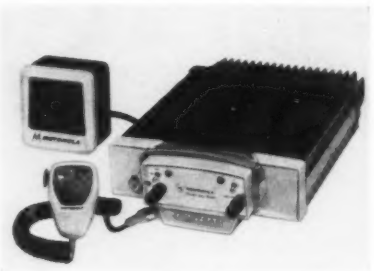

Fig. 2

is expected to be used by the police, fire department, military, construction industry, forestry, utilities, refining, and manufacturing companies.

The receiver is less than 6 inches long, 2½ inches wide, and 1⅛ inches deep.

The portable transmitter weighs 46 ounces and measures about 8x4 by 1½ inches. It, too, the company reports, can be carried on the user's belt.

A second model of the pocket receiver has a selective signaling feature which will pick up only messages intended for the individual using the unit, ignoring all others, even if they are on the same frequency, Motorola said.

The other product, "Motrac," the new mobile radiophone, is described as using less than 2 amperes of electricity while on standby, waiting to receive a message.

It weighs 25 pounds, measures 3 inches high, 11 wide, and 17 long, and can be installed behind the dashboard or in the trunk of a car, the company disclosed. The receiver and power supply are completely transistorized; the transmitter partially. Twenty transistors are used in the radiophone. Request NP948.

•

FOLD-OVER ANTENNA TOWER—Rohn Manufacturing Co. announces a new "fold-over" antenna tower which is described as being especially suited for use in amateur radio, experimentation, and general purposes wherever the "fold-over" design is necessary or desirable. The company says one big advantage of the "fold-over" feature is that it allows working on the ground whenever servicing of the antenna or rotator is required.

The tower is available in a height up to 70 feet and is structurally designed to handle practically all sizes

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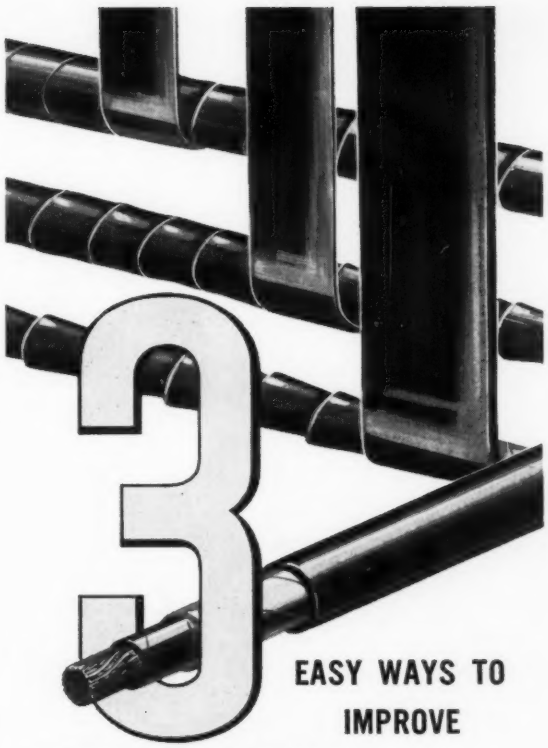

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and types of antennas, Rohn reports. The tower sections are in a 12½-inch equiangular triangle design with "zig-zag" steel cross bracing, all electric welded. Sections are 10 feet in length for easy installation. Tower is complete and includes boom, cable and windlass, and special hinged section. Request NP949.

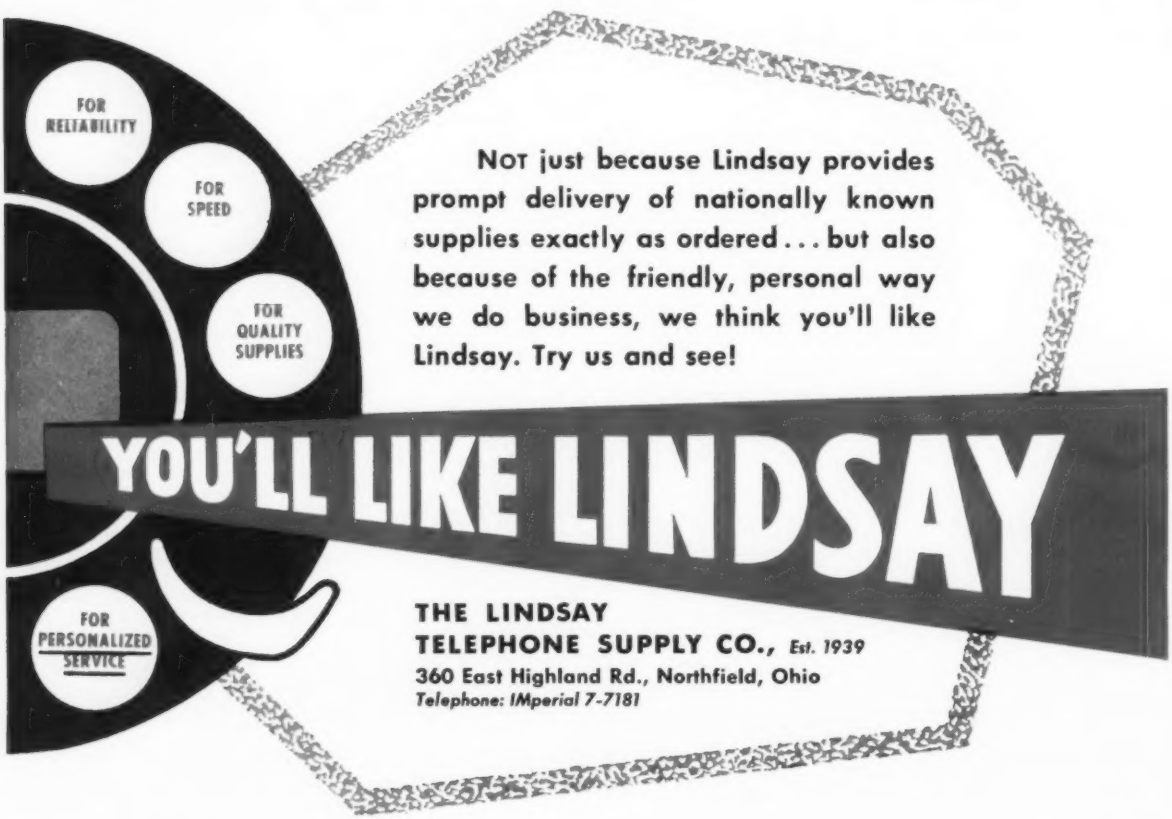
•

REFRIGERATOR COMPRESSOR AIR DRYER FOR CABLES—Puregas Equipment Corp. has announced the development of a fully automatic refrigerator compressor dryer to supply dry air for pressurizing aerial and underground cables.

The compressor dryer is furnished as a complete unit with integral air supply and alarm facilities, encased in a baked enameled steel cabinet. It is available in sizes to handle pressurization requirements of the smallest long distance repeater stations and CDO's up to the largest central offices and exchanges.

The refrigeration drying principle utilized is quite simple, the company states. In operation, room air is compressed to several atmospheres and delivered to a storage tank where it is cooled to a temperature above freezing. As a result of the compression and cooling processes approximately 75 per cent of the moisture in the air is condensed to liquid form.

A further reduction in the moisture content of the air is effected during the expansion from the high pressure in the storage tank to that maintained in the cable. This method of moisture removal is capable of reducing the relative humidity of ambient air from 100 per cent at high temperature to approximately 2 per cent at 70°F, according to the company. Request NP950.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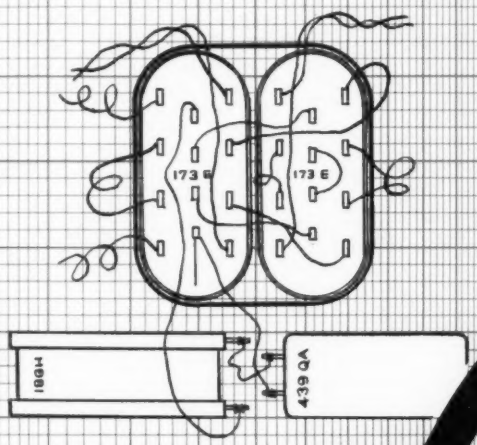

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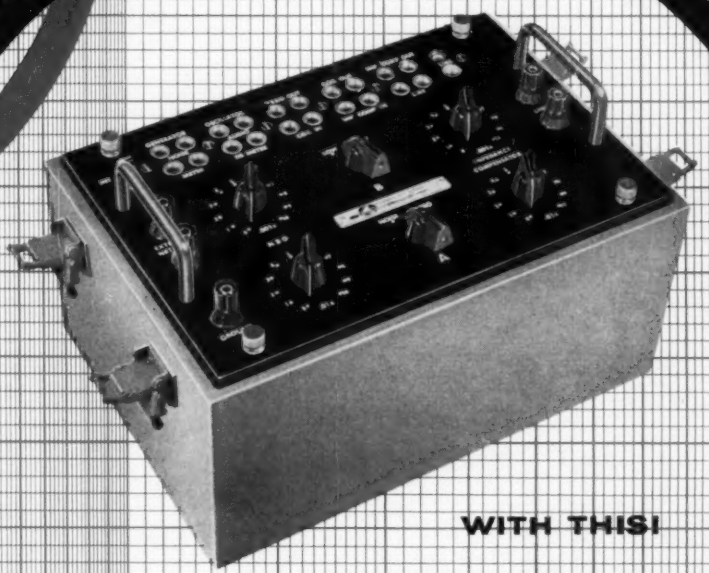

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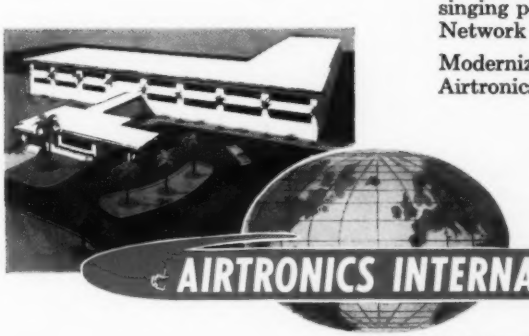
How many times have you heard telephone men say, "Why can't we have a complete Test Hybrid, all in one case? No maze of tape and wire connections. No soldering and unsoldering. No strapping and unstrapping. No more broken connections that are so hard to find, so time-consuming to repair!"

The Airtronics Portable Hybrid Test Set eliminates these problems. Adjustments are made with simple switch or knob settings for all acceptance tests on repeatered toll and interoffice trunks.

The 600 ohm or 900 ohm hybrid structure has high internal balance, impedance matching coil, impedance compensator and capacity decades. The controls simplify trunk completion tests, return loss or singing point measurement, or impedance compensator adjustment. Network build-out values easily determined by test.

Modernize your entire hybrid testing procedure, with the new Airtronics Portable Test Hybrid Set. Write today for full details.



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B. Lee Named Lynch Systems Design Engineer

Bock Lee has joined Lynch Carrier Systems, Inc. of San Francisco as a design engineer.

BOCK LEE

Mr. Lee was formerly a member of the technical staff of Bell Telephone Laboratories, Inc., New York, where he did design work on transistorized equipment. During this time, he also attended and graduated from the Bell Laboratory three-year communications training program.

He attended the University of California at Berkeley, receiving his B. S. degree in Electrical Engineering and did subsequent graduate work at Brooklyn Polytechnic Institute.

Automatic Electric de Venezuela, a subsidiary of Automatic Electric International, recently announced that Donald Hegewald will supervise the operations of a newly established sales and installation service office at Maracaibo, Venezuela. Mr. Hegewald, who was born in New York City, served six years with the Bell System, two years with the Arabian-American Oil Co. in Saudi Arabia and three years with the Oronoco Mining Co. in Venezuela, before joining Automatic Electric de Venezuela at its main office in Caracas two years ago.

Graybar Names Kennedy, Bronson As Managers

G. J. Kennedy has been appointed district sales manager at Queens Plaza in the New York district for the Graybar Electric Co. His appointment, effective Sept. 1, was announced by R. B. Sayre, vice president in charge of sales.

Also effective Sept. 1, is the appointment of W. T. Bronson as manager at Syracuse. News of his appointment came from E. R. Yonkers, eastern district manager.

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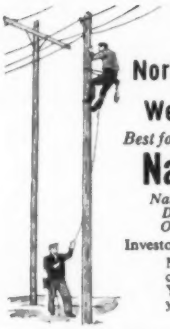

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International Paper Co., Wood Preserving Division, Sales—926 Grand Avenue, Kansas City, Mo.—Pressure-treated Southern Pine and Douglas Fir Poles. Creosote and Penta preservatives.

Montana Pole & Treating Plant—Box 2004, Butte, Montana. Penta-Pressure treated Lodgepole Pine and Western Larch Poles. Inquiries invited.

Piedmont Wood Preserving Company —Creosoted and Creosote-Penta Treated Pine Poles. Plant, Augusta, Georgia. Yards, Virginia, West Virginia and Connecticut. Address inquiries to Box 1662, Spartanburg, S. C.

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CABLE SPLICERS, Station Installers, Equipment Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 1211 Kenmore Avenue, Elkhart, Indiana, or 6100 N. 20th St., Philadelphia, Pa.

WANTED: Telephone Installers, Cable Splicers, Linemen, Central Office Installers. Yates Construction Company, 1507 South 6th St., Paducah, Kentucky. Telephone 2-4623.

GENERAL CONSTRUCTION SUPERINTENDENT by active mid-western contracting firm. Must have experience in all phases of telephone plant construction and ability to supervise and train others. Travel expenses. Salary commensurate with experience and ability. Reply Box No. 4143, c/o TELEPHONY.

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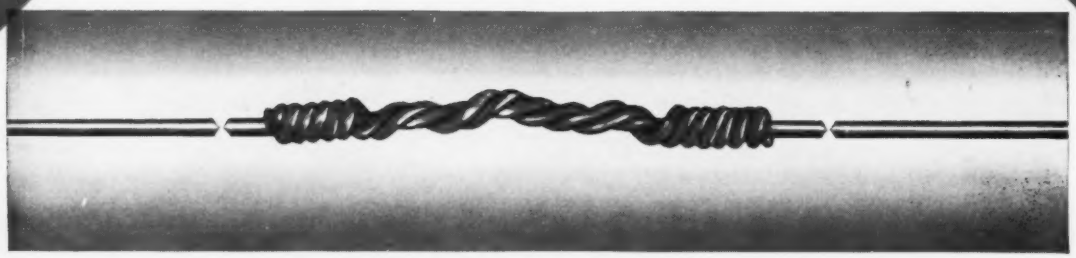

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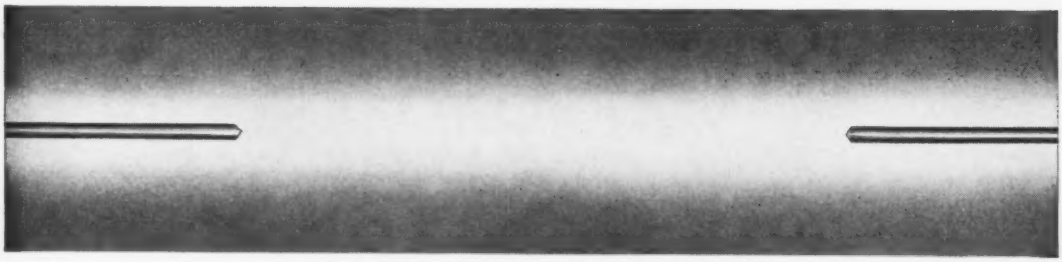

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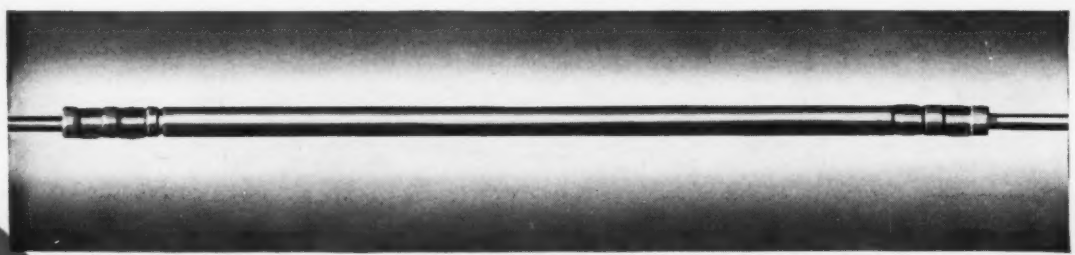

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